

GNU Image Manipulation Program

User Manual

July 7, 2006

Revision History

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Preface

GIMP User Manual Authors and Contributors

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Part I.

Getting started with The GIMP

1. Introduction

1.1. Welcome to The GIMP

The GIMP is a multiplatform photo manipulation tool. GIMP is an acronym for GNU Image Manipulation Program. The GIMP is suitable for a variety of image manipulation tasks, including photo retouching, image composition, and image construction.

It has many capabilities. It can be used as a simple paint program, an expert quality photo retouching program, an online batch processing system, a mass production image renderer, an image format converter, etc.

GIMP is expandable and extensible. It is designed to be augmented with plug-ins and extensions to do just about anything. The advanced scripting interface allows everything from the simplest task to the most complex image manipulation procedures to be easily scripted.

One of The GIMP's strengths is its free availability from many sources for many operating systems. Most GNU/Linux distributions include The GIMP as a standard application. The GIMP is also available for other operating systems such as Microsoft Windows or Apple's Mac OS X (Darwin). The GIMP is not freeware. It is a Free Software application covered by the General Public License (GPL license <<http://www.gnu.org/licenses/gpl/>>). The GPL provides users with the freedom to access and alter the source code that makes up computer programs.

1.1.1. Authors

The first version of the GIMP was written by Peter Mattis and Spencer Kimball. Many other developers have contributed more recently, and thousands have provided support and testing. GIMP releases are currently being orchestrated by Sven Neumann and Mitch Natterer and many other people called the GIMP-Team.

1.1.2. The GIMP-Help system

The GIMP-Help system provides you with the information necessary to understand how to use The GIMP. You can get context sensitive help while using GIMP by pressing the F1 key. Help on specific menu items can be accessed by pressing the F1 key while the mouse focuses the menu item. Read on to begin your GIMP journey.

1.1.3. Features and Capabilities

This is only a brief list of GIMP features:

Esta es sólo una lista resumida de las propiedades del GIMP:

- Full suite of painting tools including brushes, a pencil, an airbrush, cloning, etc.
- Tile-based memory management so image size is limited only by available disk space
- Sub-pixel sampling for all paint tools for high-quality anti-aliasing
- Full Alpha channel support
- Layers and channels
- A procedural database for calling internal GIMP functions from external programs, such as Script-Fu
- Advanced scripting capabilities
- Multiple undo/redo (limited only by disk space)

- Transformation tools including rotate, scale, shear and flip
- File formats supported include GIF, JPEG, PNG, XPM, TIFF, TGA, MPEG, PS, PDF, PCX, BMP and many others
- Selection tools including rectangle, ellipse, free, fuzzy, bezier and intelligent
- Plug-ins that allow for the easy addition of new file formats and new effect filters

1.2. What's New in The GIMP?

GIMP 1.0 evolved gradually into the very stable and widely used 1.2 release. Three years later, as the GIMP development came closer to the next stable release, they decided that the level of fundamental change to the inner workings of the program justified calling the new stable version 2.0. GIMP 2.0.0 was released on March 23, 2004. For GIMP 2.2, the developers aimed at a short cycle, adding a number of important features that did not require instability-inducing low level changes. GIMP 2.2.0 was released on December 19, 2004. This section briefly describes the new features that were added in GIMP 2.2, as well as the features that were introduced in GIMP 2.0.

Here is a brief summary of some of the most important new features introduced in GIMP 2.2. There are many other smaller changes that long-time users will notice and appreciate (or complain about!). There are also important changes at the level of plugin programming and script-fu creating that are not covered here.

1.2.1. Interoperability and standards support

- You can drag-and-drop or copy-and-paste image data from the GIMP to any application which support image/png drops (currently Abiword and Kword at least) and image/xml+svg drops (Inkscape supports this one). So you can copy-and-paste curves into the GIMP from Inkscape, and then drag a selection into Abiword to include it inline in your document.
- Patterns can now be any supported `GtkPixbuf` format, including png, jpeg, xbm and others.
- GIMP can load gradients from SVG files, and palettes from ACT and RIFF files.
- Drag-and-drop support has been extended. You can now drop file and URIs onto an image window, where they will be opened in the existing image as new layers.

1.2.2. Shortcut editor

You can now edit your shortcuts in a dedicated dialog, as well as continue to use the little-known dynamic shortcuts feature (which has been there since 1.2).

1.2.3. Plug-in previews

We have provided a standard preview widget for plug-in authors which greatly reduces the amount of code required to support previews. David Odin has integrated this widget into all the current filters, so that now many more filters in the GIMP include a preview which updates in real time, and the various previews behave much more consistently.

1.2.4. Real-time previews of transform operations

The transform tools (shear, scale, perspective and rotate) can now show a real-time preview of the result of the operation when the tool is in "Traditional" mode. Previously, only a transforming grid was shown.

1.2.5. GNOME Human Interface Guide conformance

A lot of work has been done on making the GIMP's interface simpler and more usable for newcomers. Most dialogs now follows the GNOME HIG to the best of our knowledge. In addition, dialogs have separated out or removed many "Advanced" options, and replaced them with sane defaults or hidden them in an expander.

1.2.6. GTK+ 2.4 migration

- Menus use the `GtkUIManager` to generate menu structure dynamically from XML data files.
- A completely revamped File Chooser is used everywhere in the GIMP for opening or saving files. The best thing about it is that it lets you create a set of "bookmarks", making it possible to navigate quickly and easily to commonly used directories.
- GIMP now Supports fancy ARGB cursors when they are available on the system.

1.2.7. Basic vector support

Using the GFig plug-in, the GIMP now supports the basic functionality of vector layers. The GFig plug-in supports a number of vector graphics features such as gradient fills, Bezier curves and curve stroking. It is also the easiest way to create regular or irregular polygons in the GIMP. In the GIMP 2.2, you can create GFig layers, and re-edit these layers in GFig afterwards. This level of vector support is still quite primitive, however, in comparison to dedicated vector-graphics programs such as Inkscape.

1.2.8. Also . . .

There are many other smaller user-visible features. A rapid-fire list of some of those features is below.

- It is now possible to run the GIMP in batch mode without an X server.
- We have a GIMP binary (GIMP-console) which is not linked to GTK+ at all.
- Improved interface for extended input devices
- Editable toolbox: You can now decide which tools should be shown in the Toolbox, and their order. In particular, you can add any or all of the Color Tools to the Toolbox if you wish to.
- Histogram overlays R, G and B histograms on the Value histogram, and calculates the histogram only for the contents of the selection.
- Shortcuts are now shared across all GIMP windows.

1.3. Running GIMP

Most often, you start GIMP either by clicking on an icon (if your system is set up to provide you with one), or by typing **gimp** on a command line. If you have multiple versions of the GIMP installed, you may need to type **gimp-2.2** to get the latest version. You can, if you want, give a list of image files on the command line after the program name, and they will automatically be opened by GIMP as it starts. It is also possible, though, to open files from within GIMP once it is running.

In most operating systems, you can set things up so that various types of image files are "associated" with GIMP, and cause it to start automatically when icons for them are double-clicked.

TIP

If you want to cause a certain file type to automatically open in GIMP, you should associate it with “gimp-remote” (“gimp-win-remote” under Windows) rather than with “gimp”. The gimp-remote program is an auxiliary that comes with gimp. If gimp is not already running on the system when gimp-remote is executed, it is started and the image given as argument to gimp-remote is loaded. If gimp is already running, though, the image is simply loaded into the already-running program.

1.3.1. Command Line Arguments

Ordinarily you don’t need to give any arguments when starting GIMP, but here is a list of some that may at one time or another be useful. This is not a complete list; on Unix systems you can get a complete list by running **man gimp** in a terminal window.

-h, --help Display a list of all commandline options.

-v, --version Print the version of GIMP being used, and exit.

--verbose Show detailed startup messages.

-d, --no-data Do not load patterns, gradients, palettes, or brushes. Often useful in non-interactive situations where startup time is to be minimized.

--display *display* Use the designated X display (does not apply to GIMP on Microsoft Windows).

-s, --no-splash Do not show the splash screen while starting.

--session *name* Use a different sessionrc for this GIMP session. The given session name is appended to the default sessionrc filename.

-g, --gimprc *gimprc* Use an alternative gimprc instead of the default one. The “gimprc” file contains a record of your preferences. Useful in cases where plugins paths or machine specs may be different.

-c, --console-messages Do not popup dialog boxes on errors or warnings. Print the messages on the console instead.

-b, --batch *commands* Execute the set of commands non-interactively. The set of commands is typically in the form of a script that can be executed by one of the GIMP scripting extensions. When *commands* is `-`, the commands are read from standard input.

1.3.2. Known platforms

The GIMP is the most widely supported image manipulation available today. The platforms that The GIMP is known to work on include GNU/Linux, Apple Mac OS X (Darwin), Microsoft Windows 95, 98, Me, XP, NT4, and 2000, OpenBSD, NetBSD, FreeBSD, Solaris, SunOS, AIX, HP-UX, Tru64, Digital UNIX, OSF/1, IRIX, OS/2, and BeOS.

The GIMP can easily be ported to other operating systems because of its source code availability.

1.3.3. Language

All being well, GIMP detects the system language. This may fail on some machines and you may want use another language. It is possible to change the language: Linux

1. In *LINUX*: in console mode, type **LANGUAGE=en GIMP** or **LANG=en GIMP** replacing en by fr, de, ... according to the language you want.

Windows XP

1. In *WINDOWS XP*: Control Panel/System/ Advanced/"Environment" button/ In "System Variables" area: "Add" button: Enter LANG for Name and fr or de... for Value. Watch out! You have to click on three successive "OK" to validate your choice. If you often change language, you can create a batch file. Open NotePad. Type the following commands (for french for instance):

```
set lang=fr
cd c:"Program Files"GIMP-2.0"bin
GIMP-2.2.exe
```

Save this file as GIMP-FR.BAT (or another name, but always with a .BAT extension. Create shortcut and drag it to your desktop.

Windows ME

1. Start/Programs/ Accessories/System Tools/System Informations/Tools/System Configuration Utility/"Environment" tab/"New" button: Enter LANG for Name and fr or de... for Value.

Windows 95/Windows 98

1. Under *Window 95 and Windows 98*, add the line **set lang=fr** in the "C:\autoexec.bat" file.

Apple Mac OS X

1. Go to System Preferences, click on the International icon, and in the Language tab, the desired language should be the first in the list.

1.4. Starting GIMP the first time

The first time you run GIMP, it goes through a series of steps to set up options and directories. This process creates a subdirectory of your home directory called `.gimp-2.2`. All of the information about the choices you make here goes into that directory. If you later remove that directory, or rename it as something like `.gimp-2.2.bak`, then the next time you start GIMP, it will go through the whole setup sequence again, creating a new `.gimp-2.2` directory. You can exploit this if you want to explore the effect of different choices without destroying your existing installation, or if you have screwed things up so badly that your existing installation needs to be nuked.

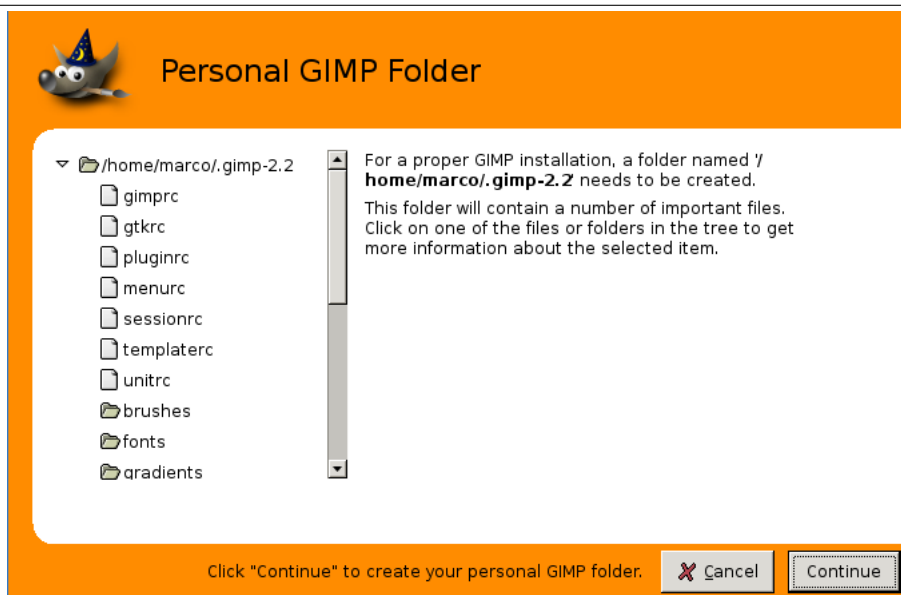
For the most part, setting up GIMP is very easy, and you can just accept the defaults at each step, and possibly adjust things later using the **Preferences** dialog. The main thing you might want to give a little thought to at the start is the amount of memory to allocate for GIMP's tile cache.

Here is a walk-through of the setup process:

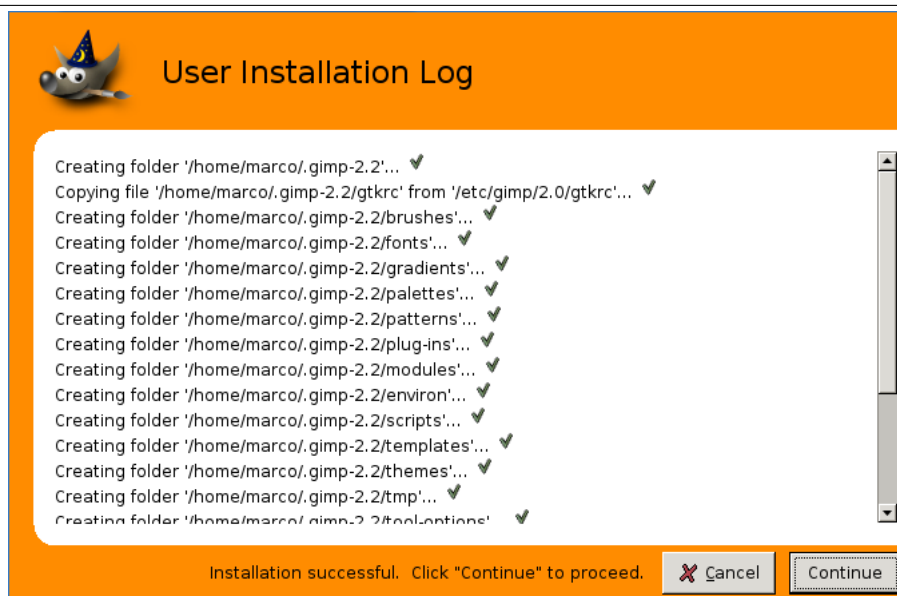
1. Since this window mentions the GNU General Public License you know it is truly a Welcome dialog you are entering into. Also, note the "Continue" button. The GIMP does not even ask that you agree to it, merely whether you want to continue. Feel free to press the continue button.

Figure 1.1. Welcome. The Welcome screen

2. The purpose of this screen is only to make the user aware of the GIMP personal settings directory, subdirectories and files creation process, before it begins. You just have to have a look and click to proceed.

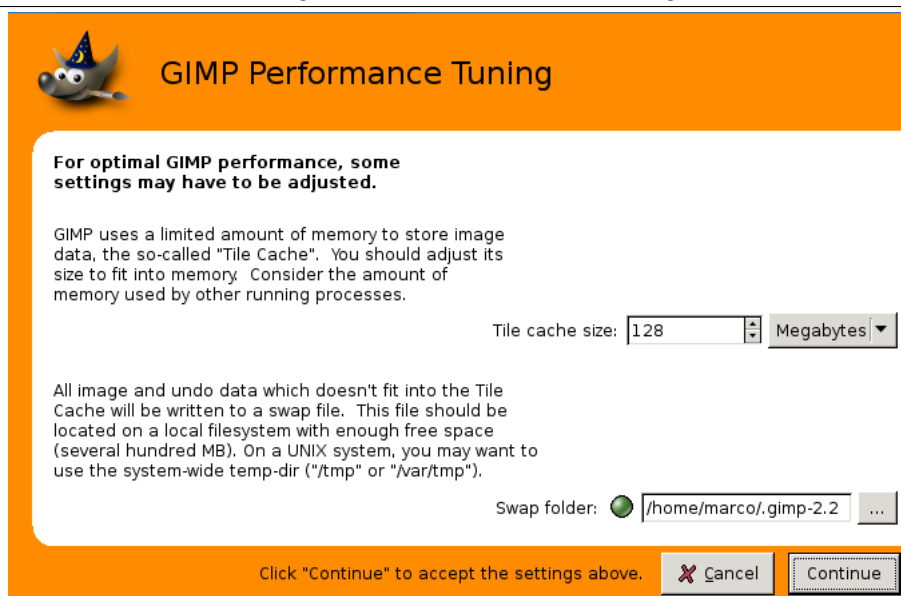
Figure 1.2. Personal GIMP Directory. The Personal Directory screen

3. This window shows you the files that GIMP will create. It will have some complaints if you told it to install some place that it don't have permission to be. There is a scroll bar to see all the things GIMP has created for you.
4. Setting your memory usage is not an easy thing. So much depends on what your needs are for the GIMP and what hardware you have to work with. You have two options at this point. Go with the default value the developers have set here, or determine the best value. A brief **tile-cache** explanation. might help you determine this value. The tile-cache information might also be helpful to you if you are encountering memory problems when using the GIMP.
On a Unix system, /tmp might be a good place for the swap.

Figure 1.3. User Installation Log. The User Installation Log screen.

Finally . . . So now you have GIMP installed and configured, and are ready to go. Just a couple of suggestions before you start, though: First, when you run GIMP, by default it shows a “tip” each time it starts up. These tips tell you things that are very useful but not easy to learn by experimenting, so they are worth paying attention to. If you find it too distracting to look at them each time you start, you can disable them; but please go through them when you have the chance: for your convenience, you can read them at any time using the menu command **Help** → **Tips**. Second, if at some point you are trying to do something, and GIMP seems to have suddenly stopped functioning, the section **Getting Unstuck** may help you out. Happy Gimping!

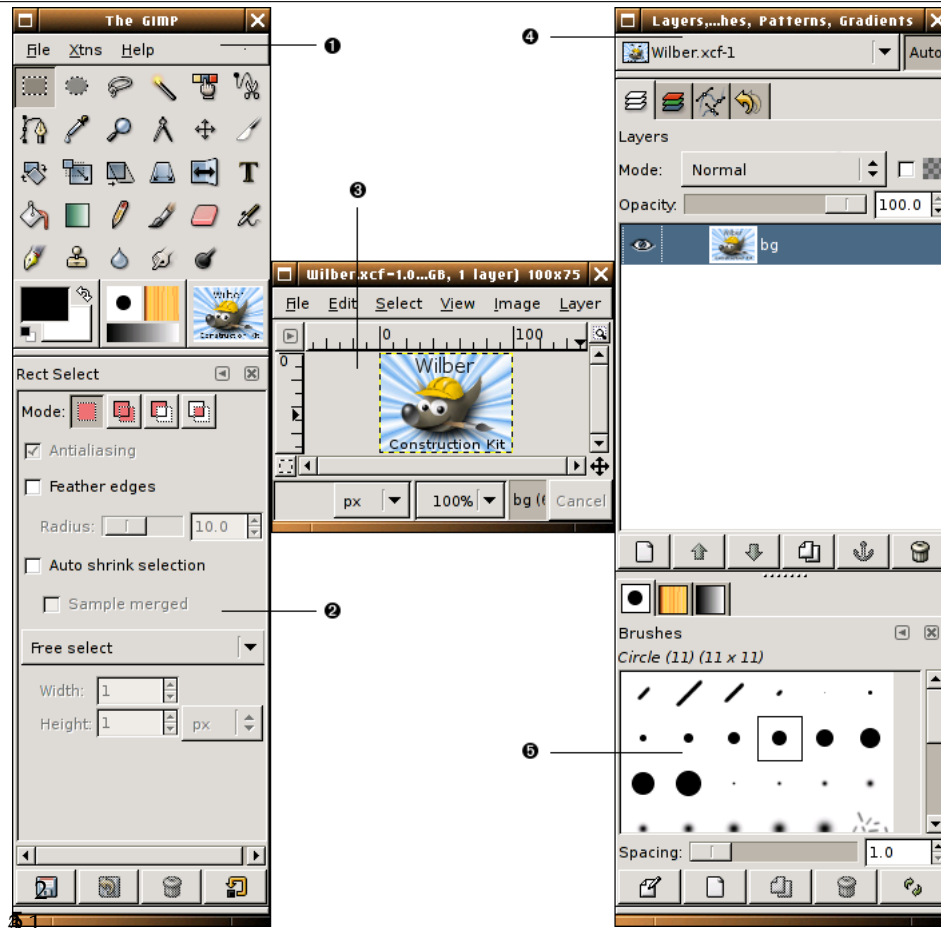
Figure 1.4. GIMP Performance Tuning. The User Performance Tuning screen



2. GIMP Concepts

2.1. Main Windows in GIMP

Figure 2.1. The screenshot illustrates the standard windows of GIMP



The screenshot above shows the most basic arrangement of GIMP windows that can be used effectively. Three windows are shown:

1. *The Main Toolbox:* This is the heart of the GIMP. It contains the highest level menu, plus a set of icon buttons that can be used to select tool, and more.
2. *Tool options:* Docked below the main Toolbox is a Tool Options dialog, showing options for the currently selected tool (in this case, the Rectangle Select tool).
3. *An image window:* Each image open in GIMP is displayed in a separate window. Many images can be open at the same time: the limit is set only by the amount of system resources. It is possible to run GIMP without having any images open, but there are not very many useful things to do then.

4. *Layers Dialog*: This dialog window shows the layer structure of the currently active image, and allows it to be manipulated in a variety of ways. It is possible to do a few very basic things without using the Layers dialog, but even moderately sophisticated GIMP users find it indispensable to have the Layers dialog available at all times.
5. *Brushes/Patterns/Gradients*: The docked dialog below the layer dialog shows the dialogs for managing brushes, patterns and gradients.

This is a minimal setup. There are over a dozen other types of dialogs used by GIMP for various purposes, but users typically create them when they are needed and close them when they are not. Knowledgeable users generally keep the Toolbox (with Tool Options) and Layers dialog around at all times. The Toolbox is essential to many GIMP operations; in fact, if you close it, GIMP will exit. (You are asked to confirm that you want to do this, though.) The Tool Options are actually a separate dialog, shown docked to the Main Toolbox in the screenshot. Knowledgeable users almost always have them set up this way: it is very difficult to use tools effectively without being able to see how their options are set. The Layers dialog comes into play whenever you work with an image that has multiple layers: once you advance beyond the very most basic stages of GIMP expertise, this means *almost always*. And finally, of course, the necessity of having images displayed in order to work with them is perhaps obvious.

NOTE



If your GIMP layout gets trashed, fortunately the arrangement shown in the screenshot is pretty easy to recover. In the **File** menu from the Main Toolbox, selecting **File** → **Dialogs** → **Create New Dock** → **Layers, Channels, and Paths** will give you a Layers dialog just like the one shown. In the same menu, selecting **File** → **Dialogs** → **Tool Options** gives you a new Tool Options dialog, which you can then dock below the Main Toolbox. (The section on [Dialogs and Docking](#) explains how to dock dialogs.) There is no need to be able to create a new Main Toolbox, because you cannot get rid of the one you have without causing GIMP to exit.

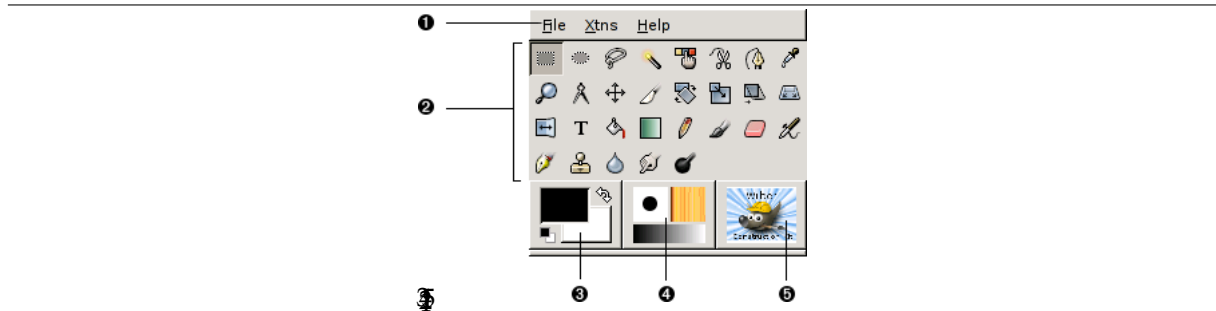
Unlike some other programs, GIMP does not give you the options of putting everything—controls and image displays—all into a single comprehensive window. The GIMP developers have always felt that this is a poor way of working, because it forces the program to perform a wide range of functions that are much better done by a dedicated window manager. Not only would this waste a lot of programmer time, it is almost impossible to do in a way that works correctly across all of the operating systems GIMP is intended to run on.

Earlier versions of the GIMP (up to GIMP 1.2.5) were very profligate with dialogs: advanced users often had half a dozen or more dialogs open at once, scattered all over the screen and very difficult to keep track of. GIMP 2.0 is much better in this respect, because it allows dialogs to be docked together in a flexible way. (The Layers dialog in the screenshot actually contains four dialogs, represented by tabs: Layers, Channels, Paths, and Undo.) The system takes a little while to learn, but once you learn it, we hope that you will like it.

The following sections will walk you through the components of each of the windows shown in the screenshot, explaining what they are and how they work. Once you have read them, plus the section describing the basic structure of GIMP images, you should have learned enough to use GIMP for a wide variety of basic image manipulations. You can then look through the rest of the manual at your leisure (or just experiment) to learn the almost limitless number of more subtle and specialized things that are possible. Have fun!

2.1.1. The Main Toolbox

The Main Toolbox is the heart of the GIMP. It is the only part of the application that you cannot duplicate or close. Here is a quick tour of what you will find there.

Figure 2.2. Screenshot of the Toolbox**TIP**

In the Toolbox, as in most parts of GIMP, moving the mouse on top of something and letting it rest for a moment will usually bring up a "tooltip" message that may help you understand what the thing is or what you can do with it. Also, in many cases you can press the **F1** key to get help about the thing that is underneath the mouse.

1. *Toolbox Menu:* This menu is special: it contains some commands that cannot be found in the menus that are attached to images. (Also some that can.) These include commands for setting preferences, creating certain types of dialogs, etc. The contents are described systematically in the [Toolbox Menu](#) section.
2. *Tool icons:* These icons are buttons that activate tools for a wide variety of purposes: selecting parts of images, painting on them, transforming them, etc. The [Toolbox Introduction](#) section gives an overview of how to work with tools, and each tool is described systematically in the [Tools](#) chapter.
3. *Foreground/Background colors:* The color areas here show you GIMP's current foreground and background colors, which come into play in many operations. Clicking on either one of them brings up a color selector dialog that allow you to change to a different color. Clicking on the double-headed arrow swaps the two colors, and clicking on the small symbol in the lower left corner resets them to black and white.
4. *Brush/Pattern/Gradient* The symbols here show you GIMP's current selections for: the Paintbrush, used by all tools that allow you to paint on the image ("painting" includes operations like erasing and smudging, by the way); for the Pattern, which is used in filling selected areas of an image; and for the Gradient, which comes into play whenever an operation requires a smoothly varying range of colors. Clicking on any of these symbols brings up a dialog window that allows you to change it.
5. *Active Image:* (This is a new feature in GIMP 2.2) In GIMP, you can work with many images at once, but at any given moment, one of them is the "active image". Here you find a small iconic representation of the active image. Clicking on it brings up a dialog with a list of all the currently open images, allowing you to make a different one active if you want to. (Clicking on the window where the image is displayed will accomplish the same thing, though.)

NOTE



The "Active Image" preview is disabled by default. If you want it, you can enable it in the **Toolbox Preferences** tab.

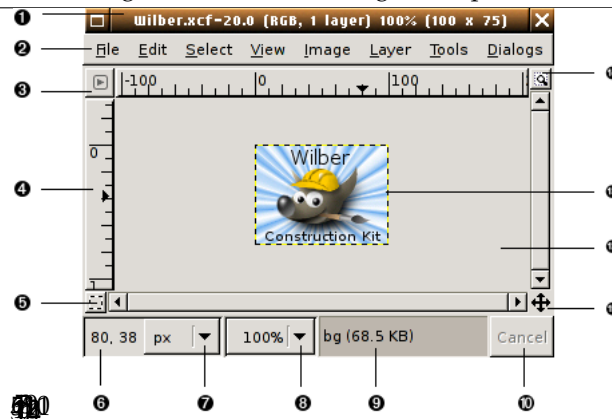
NOTE



At every start, GIMP selects a tool (the brush), a color, a brush and a pattern by default, always the same. If you want GIMP to select the last tool, color, brush and pattern you used when quitting your previous session, check the "Set input device settings on exit" in Preferences/Input Devices.

2.1.2. Image Window

Figure 2.3. A screenshot of the image window illustrating the important components




In GIMP, each image that you have open is displayed in its own separate window. (In some cases, multiple windows may all display the same image, but this is unusual.) We will begin with a brief description of the components that are present by default in an ordinary image window. Some of these, in fact, can be made to disappear using commands in the **View** menu; but you will probably find that you don't want to do that.

1. **Title Bar:** At the top of the image window you will probably see a emphasis bar, showing the name of the image and some basic information about it. The emphasis bar is actually provided by the windowing system, not by GIMP itself, so its appearance may vary with different operating systems, window managers, and/or themes. In the **Preferences dialog** you can customize the information that appears here, if you want to.
2. **Image Menu:** Directly below the emphasis bar appears the Image Menu (unless it has been suppressed). This menu gives you access to nearly every operation you can perform on an image. (There are some "global" actions that can only be accessed via the Toolbox menu.) You can also get the Image Menu by right-clicking inside the image ¹, or by left-clicking on the little "arrow" symbol in the upper left corner, if for some reason you find one of these more convenient. More: most menu operations can also be activated from the keyboard, using Alt plus an "accelerator" key underlined in the menu emphasis. More: you can define your own custom shortcuts for menu actions, if you enable **Use Dynamic Keyboard Shortcuts** in the Preferences dialog.

¹ Users with an Apple Macintosh and a one button mouse can use **Ctrl** + mousebutton instead.

3. *Menu Button*: Clicking on this little button gives you the Image Menu, except in a column instead of a row. Mnemonics users who don't want the menu bar visible can access to this menu by pressing the **Shift-F10** key.
 4. *Ruler*: In the default layout, rulers are shown above and to the left of the image, indicating coordinates within the image. You can control what type of coordinates are shown if you want to. By default, pixels are used, but you can change to other units, using the Units setting described below.

One of the most important uses of rulers is to create *guides*. If you click on a ruler and drag into the image display, a guideline will be created, which you can use to help you position things accurately. Guides can be moved by clicking on them and dragging, or deleted by dragging them out of the image display.
 5. *QuickMask Toggle*: At the lower left corner of the image display is a small button that toggles on or off the Quick Mask, which is an alternate, and often extremely useful, way of viewing the selected area within the image. For more details see [QuickMask](#).
 6. *Pointer Coordinates*: In the lower left corner of the window is a rectangular area used to show the current pointer coordinates (that is, the mouse location, if you are using a mouse), whenever the pointer is within the image boundaries. The units are the same as for the rulers.
 7. *Units menu*: (This feature is new in GIMP 2.2; it does not appear in GIMP 2.0). By default, the units used for the rulers and several other purposes are pixels. You can change to inches, cm, or several other possibilities using this menu. (If you do, note that the setting of "Dot for dot" in the View menu affects how the display is scaled: see [Dot for Dot](#) for more information.
 8. *Zoom button*: (This feature is new in GIMP 2.2; it does not appear in GIMP 2.0). There are a number of ways to zoom the image in or out, but this menu is perhaps the simplest.
 9. *Status Area*: The Status Area appears below the image display. Most of the time, by default, it shows which part of the image is currently active, and the amount of system memory that the image is consuming. You can customize the information that appears here, by changing your Preferences. When you perform time-consuming operations, the status area changes temporarily to show what operation is being performed, and its state of progress.
- NOTE



Note that the amount of memory consumed by the image is quite different from the image file size. For instance, a 69.7Kb .PNG image will occupy 246Kb in memory when displayed. Two reasons for that. First, image is reconstituted from the compressed .PNG file. Then, GIMP keeps a copy of the image in memory to be used by the Undo command.
10. *Cancel Button*: At the lower right corner of the window appears the Cancel button. If you start a complex, time-consuming operation (most commonly a plug-in), and then decide, while it is being computed, that you didn't really want to do it after all, this button will cancel it immediately.

NOTE

There are a few plug-ins that respond badly to being canceled, possibly leaving corrupted pieces of images behind.

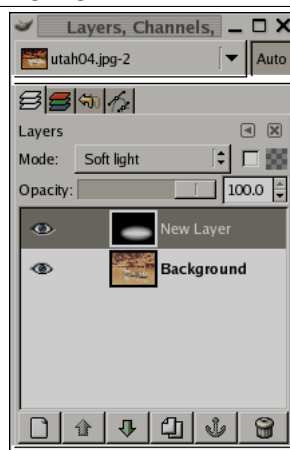
11. *Navigation control*: This is a small cross-shaped button at the lower right corner of the image display. Clicking on it, and holding the left mouse button down, brings up a window showing a miniature view of the image, with the displayed area outlined. You can pan to a different part of the image by moving the mouse while keeping the button depressed. For large images of which only a small part is displayed, the navigation window is often the most convenient way of getting to the part of the image you are looking for. (See [Navigation Dialog](#) for other ways to access the Navigation Window). (If your mouse has a middle-button, click-drag with it to span across the image).
12. *Inactive Padding Area*: This padding area separates the active image display and the inactive padding area, so you're able to distinguish between them. You cannot apply any Filters or Operations in general on the inactive area.
13. *Image Display*: The most important part of the image window is, of course, the image display or canvas. It occupies the central area of the window, surrounded by a yellow dotted line showing the image boundary, against a neutral gray background. You can change the zoom level of the image display in a variety of ways, including the Zoom setting described below.
14. *Image Window Resize Toggle*: If this button is pressed, the image itself will be resized if the image window is resized.

2.1.3. Dialogs and Docking

2.1.3.1. Docking Bars

In GIMP 2.0 and 2.2, you have a lot of flexibility about the arrangement of dialog windows on your screen. Instead of placing each dialog in its own window, you can group them together using docks. A "dock" is a container window that can hold a collection of persistent dialogs, such as the Tool Options dialog, Brushes dialog, Palette dialog, etc. Docks cannot, however, hold image windows: each image always has its own separate window. They also can't hold non-persistent dialogs, such as the Preferences dialog or the New Image dialog.

Figure 2.4. A dock, with docking bars highlighted

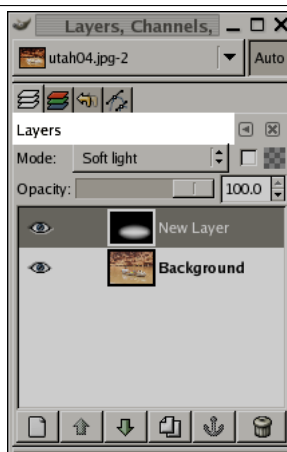


Each dock has a set of *docking bars*, as highlighted in the adjoining figure. These are thin gray bars, very unobtrusive and easy not to notice: most people don't realize that they exist until they are specifically pointed out.

2.1.3.2. Docking Drag Handles

Each dockable dialog has a *drag handle area*, as highlighted in the figure on the right. You can recognize this by the fact that the cursor changes to a hand shape when the pointer is over the drag handle area. To dock a dialog, you simply click on its drag handle area, and drag it onto one of the docking bars in a dock.

Figure 2.5. A dialog in a dock, with the drag handle area highlighted. This screenshot shows the area that allows to take a dialog off the dock.

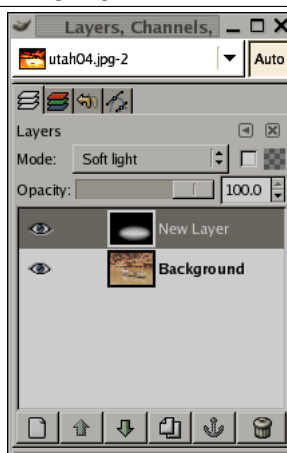


You can drag more than one dialog onto the same docking bar. If you do, they will turn into tabs, represented by iconic symbols at the top. Clicking on the tab handle will bring a tab to the front, so that you can interact with it.

2.1.3.3. Image Menu

Some docks contain an *Image Menu*: a menu listing all of the images open in GIMP, and displaying the name of the image whose information is shown in the dock. You can use the Image Menu to select a different image (don't confuse this menu for the Image Menu that is the Menu of the active image on your screen). If the **Auto** button is depressed, then the menu always shows the name of GIMP's currently active image, that is, the image you are currently working on.

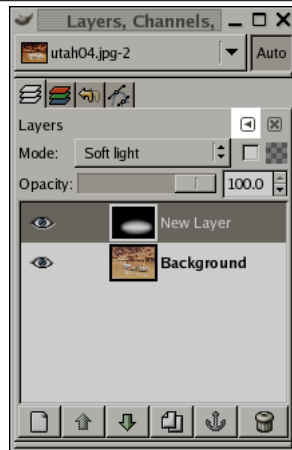
Figure 2.6. A dock with an Image Menu highlighted



By default, a “Layers, Channels, and Paths” dock shows an Image Menu at the top, and other types of docks do not. You can always add or remove an Image Menu, however, using the “Show Image Menu” toggle in the Tab menu, as described below. (Exception: you cannot add an Image Menu to the dock that contains the Toolbox.)

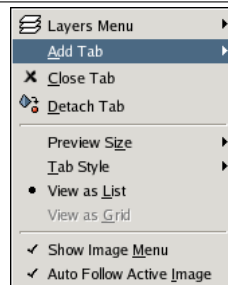
2.1.3.4. Tab Menu

Figure 2.7. A dialog in a dock, with the Tab menu button highlighted



In each dialog, you can access a special menu of tab-related operations by pressing the Tab Menu button, as highlighted in the figure on the right. Exactly which commands are shown in the menu varies a bit from dialog to dialog, but they always include operations for creating new tabs, or closing or detaching tabs.

Figure 2.8. Tab menu from the Layers dialog



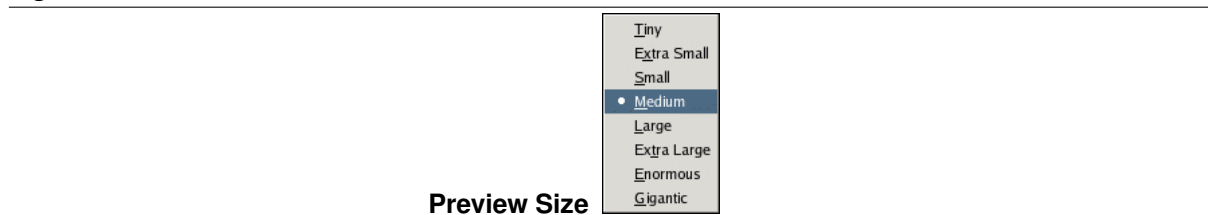
The Tab menu gives you access to the following commands:

Context Menu At the top of each Tab menu is an entry that opens into the dialog’s context menu, which contains operations specific to that particular type of dialog. For example, the context menu for the Patterns dialog contains a set of operations for manipulating patterns.

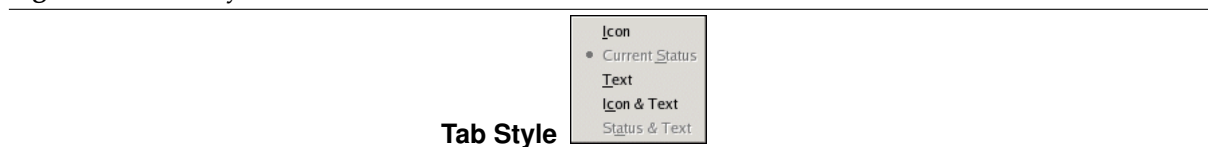
Add Tab This entry opens into a submenu allowing you to add a large variety of dockable dialogs as new tabs.

Close Tab This entry closes the dialog. Closing the last dialog in a dock causes the dock itself to close. Choosing this menu entry has the same effect as pressing the “Close Tab” button.

Detach Tab This entry detaches the dialog from the dock, creating a new dock with the detached dialog as its only member. It has the same effect as dragging the tab out of the dock and releasing it at a random location.

Figure 2.9. Preview Size submenu of a Tab menu

Many, but not all, dialogs have Tab menus containing a **Preview Size** option, which opens into a submenu giving a list of sizes for the items in the dialog (cp. [Figure 2.9](#)). For example, the Brushes dialog shows pictures of all available brushes: the Preview Size determines how large the pictures are. The default is **Medium**.

Figure 2.10. Tab Style submenu of a Tab menu

This entry is available when multiple dialogs are in the same dock: it opens into a submenu allowing you to choose how the tabs at the top will appear (cp. [Figure 2.10](#)). There are five choices, not all of which will be available for all types of dialogs:

Icon This choice gives you an icon representing the dialog type.

Current Status This choice is only available for dialogs that allow you to select something, such as a brush, a pattern, a gradient, etc. It gives you a tab showing a representation of the item currently selected.

Text This choice gives you a tab showing the dialog type in text.

Icon and Text This choice gives you wider tabs, containing both an icon and the type of dialog in text.

Status and Text This choice, where available, shows the item currently selected, as well as the type of dialog.

View as List; View as Grid These entries are shown in dialogs that allow you to select an item from a set: brushes, patterns, fonts, etc. You can choose whether to view the items as a vertical list, with the name of each beside it, or as a grid, with representations of the items but no names. Each has its advantages: viewing as a list gives you more information, but viewing as a grid allows you to see many more possibilities at once. The default for this varies across dialogs: for brushes and patterns, the default is a grid; for most other things, the default is a list.

Show Image Menu This is a toggle. If it is checked, then an Image Menu is shown at the top of the dock. It is not available for dialogs docked below the Toolbox. Don't confuse this menu for the Image Menu, that is the menu of the active image on your screen.

Auto Follow Active Image This is a toggle, and it is meaningless unless an Image Menu is being shown. It causes the Image Menu, and hence the contents of the dialog if they are image-related, to change to follow whatever image you are working on at the moment.

2.2. Basic GIMP Concepts

This section is intended to give you a brief introduction to the basic concepts and terminology you will need to understand in order to make sense to the rest of the documentation. Everything here is explained in much greater depth elsewhere. With a few exceptions, we have avoided cluttering this section with a lot of links and cross-references: everything mentioned here is so high-level that you should easily be able to locate it in the index.

Overview The GIMP is an image manipulation program. At the most sweeping level, using GIMP involves three basic steps: (1) opening images or creating new ones; (2) altering those images; (3) saving the results.

Opening Images Depending on how GIMP was started, there may already be one or more images open when you begin. You can open new images from files using the **Open** command from the File menu. GIMP is capable of opening a large variety of graphics file formats; see **Files** for more information. Depending on how your system is set up, you may also be able to open images by clicking on icons in a file manager, or by drag-and-drop from other programs. If you aren't sure whether you can do this, just try it. The worst thing that can happen is that your computer could explode.

Altering Images Gimp provides you with an enormous number of ways of acting on images: painting tools, color manipulation tools, transformation tools, filters, etc. The bulk of this manual is devoted to describing these tools and how to work with them.

Saving Images When you are finished working with an image, you will want to save the results. (In fact, it is often a good idea to save at intermediate stages too: Gimp is a pretty robust program, but we have heard rumors, possibly apocryphal, that it may have been known on rare and mysterious occasions to crash.) Most of the file formats that Gimp can open, can also be used for saving. There is one file format that is special, though: XCF is Gimp's native format, and is useful because it stores *everything* about an image (well, almost everything; it does not store "undo" information). Thus, the XCF format is especially suitable for saving intermediate results, and for saving images to be re-opened later in Gimp. XCF files are not readable by most other programs that display images, so once you have finished, you will probably also want to save the image in a more widely used format, such as JPEG, PNG, TIFF, etc.

Images Images are the basic entities that Gimp works with. Roughly speaking, an "image" corresponds to a single file, such as a TIFF or JPEG file. You can also think of an image as corresponding to a single display window, but this is not quite correct: it is possible to have multiple windows all displaying the same image. It is not possible to have a single window display more than one image, though, or for an image to have no window displaying it.

A Gimp image may be quite a complicated thing. Instead of thinking of it as something like a sheet of paper with a picture on it, you should think of it as more like a book, whose pages are called "layers" In addition to a stack of layers, a Gimp image may contain a selection mask, a set of channels, and a set of paths. In fact, Gimp provides a mechanism for attaching arbitrary pieces of data to an image, as what are called "parasites"

In Gimp, it is possible to have many images open at the same time. If they are large, each image may use many megabytes of memory, but Gimp uses a sophisticated tile-based memory management system that allows it to handle even very large images gracefully. There are, however, limits,

and it is usually beneficial when working with images to put as much memory into your system as possible.

Layers If an image is like a book, then a layer is like a page within the book. The simplest images only contain a single layer, and can be treated like single sheets of paper, but sophisticated Gimp users often deal with images containing many layers, even dozens of them. Layers need not be opaque, and they need not cover the entire extent of an image, so when you look at an image's display, you may see more than just the top layer: you may see elements of many layers.

Channels In Gimp Channels are the smallest units of subdivision in the stack of layers from which the image is constructed. Every Channel in a layer has exactly the same size as the layer it belongs to and consequently consists of the same pixels. Every pixel can be regarded as a container which can be filled with a value ranging from 0 to 255. The exact meaning of this value depends on the type of channel, e.g. in the RGB color model the value in the *R*-channel means the amount of red which is added to the colour of the different pixels, in the selection channel the value denotes how strong the pixels are selected and in the alpha channel the values denote how transparent the corresponding pixels are.

Selections Often when you do something to an image, you only want a part of it to be affected. The “selection” mechanism makes this possible. Each image has its own selection, which you normally see as an moving dashed line separating the selected parts from the unselected parts (the so-called “marching ants” Actually this is a bit misleading: selection in Gimp is really graded, not all-or-nothing, and really the selection is represented by a full-fledged grayscale channel. The dashed line that you normally see is simply a contour line at the 50%-selected level. At any time, though, you can visualize the selection channel in all its glorious detail by toggling the **QuickMask** button. A large component of learning how to use Gimp effectively is acquiring the art of making good selections—selections that contain exactly what you need and nothing more. Because selection-handling is so centrally important, Gimp gives you a large number of tools for doing it: an assortment of selection-making tools, a menu of selection operations, and the ability to switch to Quick Mask mode, in which you can treat the selection channel as though it were a color channel, thereby “painting the selection”

Undoing When you make mistakes, you can undo them. Nearly everything you can do to an image is undoable. In fact, you can usually undo a substantial number of the most recent things you did, if you decide that they were misguided. Gimp makes this possible by keeping a history of your actions. This history consumes memory, though, so undoability is not infinite. Some actions use very little undo memory, so that you can do dozens of them before the earliest ones are deleted from this history; other types of actions require massive amounts of undo memory. You can configure the amount of memory Gimp allows for the undo history of each image, but in any situation, you should always be able to undo at least your 2-3 most recent actions. (The most important action that is not undoable is closing an image. For this reason, Gimp asks you to confirm that you really want to close the image if you have made any changes to it.)

Plug-ins Many, probably most, of the things you do to an image in Gimp are done by the Gimp application itself. However, Gimp also makes extensive use of “plug-ins” which are external programs that interact very closely with Gimp, and are capable of manipulating images and other Gimp objects in very sophisticated ways. Many important plug-ins come packaged together with Gimp, but there are also many available by other means. In fact, the ability to write plug-ins (and scripts) is the easiest way for people not on the Gimp development team to add new capabilities to Gimp. All of the commands in the Filters menu, and a substantial number of commands in other menus, are actually implemented by plug-ins.

Scripts In addition to plug-ins, which are programs written in the C language, GIMP can also make use of scripts. The largest number of existing scripts are written in a language called Script-Fu, which

is special to GIMP (for those who care, it is a dialect of the Lisp-like language called Scheme). It is also possible to write GIMP scripts in Python or Perl. These languages are more flexible and powerful than Script-Fu; their disadvantage is that they depend on software that does not automatically come packaged with GIMP, so they are not guaranteed to work correctly in every GIMP installation.

2.3. Working with Images

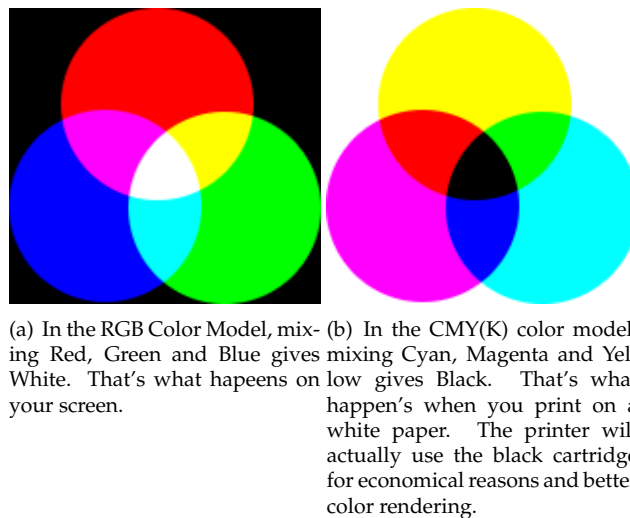
2.3.1. Image types

It is tempting to think of an *image* as something that corresponds a single display window, or to a single file such as a **JPEG** file, but really a Gimp image is a rather complicated structure, containing a stack of layers plus several other types of objects: a selection mask, a set of channels, a set of paths, an “undo” history, etc. In this section we are going to take a detailed look at all of the components of an image, and the things you can do with them.

The most basic property of an image is its *mode*. There are three possible modes: RGB, grayscale, and indexed. RGB stands for Red-Green-Blue, and indicates that each point in the image is represented by a “red” level, a “green” level, and a “blue” level. Because every humanly distinguishable color can be represented as a combination of red, green, and blue, RGB images are full-color. Each color channel has 256 possible intensity levels. More details in **Color Models**

In a grayscale image, each point is represented by a brightness value, ranging from 0 (black) to 255 (white), with intermediate values representing different levels of gray.

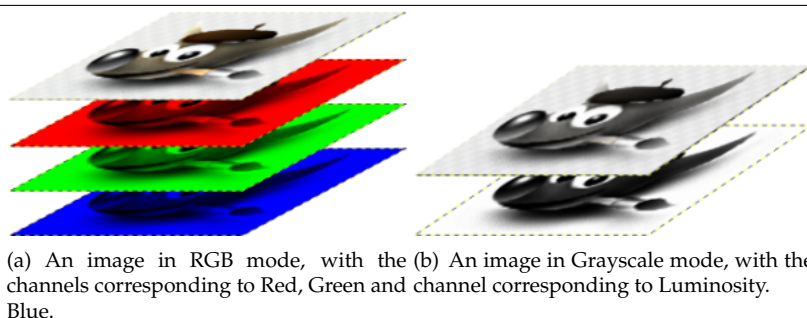
Figure 2.11. Components of the RGB and CMY color model



Essentially the difference between a grayscale image and an RGB image is the number of “color channels”: a grayscale image has one; an RGB image has three. An RGB image can be thought of as three superimposed grayscale images, one colored red, one green, and one blue.

Actually, both RGB and grayscale images have one additional color channel, called the *alpha* channel, representing opacity. When the alpha value at a given location in a given layer is zero, the layer is completely transparent, and the color at that location is determined by what lies underneath. When alpha is maximal, the layer is opaque, and the color is determined by the color of the layer. Intermediate alpha values correspond to varying degrees of translucency: the color at the location is a proportional mixture of color from the layer and color from underneath.

In Gimp, every color channel, including the alpha channel, has a range of possible values from 0 to 255; in computing terminology, a depth of 8 bits. Some digital cameras can produce image files with a depth of 16 bits per color channel. Gimp cannot load such a file without losing resolution. In most cases the effects are too subtle to be detected by the human eye, but in some cases, mainly where there are large areas with slowly varying color gradients, the difference may be perceptible.

Figure 2.12. Example of an image in RGB and Grayscale mode**Figure 2.13.** Example of an image with alpha channel

The third type, *indexed* images, is a bit more complicated to understand. In an indexed image, only a limited set of discrete colors are used, usually 256 or less. These colors form the “colormap” of the image, and each point in the image is assigned a color from the colormap. Indexed images have the advantage that they can be represented inside a computer in a way that consumes relatively little memory, and back in the dark ages (say, ten years ago), they were very commonly used. As time goes on, they are used less and less, but they are still important enough to be worth supporting in Gimp. (Also, there are a few important kinds of image manipulation that are easier to implement with indexed images than with continuous-color RGB images.)

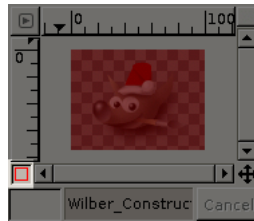
Some very commonly used types of files (including **GIF** and **PNG**) produce indexed images when they are opened in Gimp. Many of Gimp’s tools don’t work very well on indexed images—and many filters don’t work at all—because of the limited number of colors available. Because of this, it is usually best to convert an image to RGB mode before working on it. If necessary, you can convert it back to indexed mode when you are ready to save it

Gimp makes it easy to convert from one image type to another, using the **Mode** command in the Image menu. Some types of conversions, of course (RGB to grayscale or indexed, for example) lose information that cannot be regained by converting back in the other direction.

NOTE



If you are trying to use a filter on an image, and it appears grayed out in the menu, usually the cause is that the image (or, more specifically, the layer) you are working on is the wrong type. Many filters can’t be used on indexed images. Some can be used only on RGB images, or only on grayscale images. Some also require the presence or absence of an alpha channel. Usually the fix is to convert the image to a different type, most commonly RGB.

Figure 2.14. Image with QuickMask enabled

2.3.2. QuickMask

The **selection tools** sometimes show their limits when they have to be used for creating a complex selection. In these cases, using the QuickMask can make things much easier. Simply put, the QuickMask allows you to paint a selection instead of just tracing its outline.

2.3.2.1. Overview

Normally when you create a selection in GIMP, you see it represented by the “marching ants” that trace along its outline. But really there may be a lot more to a selection than the marching ants show you: in GIMP a selection is actually a full-fledged grayscale channel, covering the image, with pixel values ranging from 0 (unselected) to 255 (fully selected). The marching ants are drawn along a contour of half-selected pixels. Thus, what the marching ants show you as either-or–inside or outside the boundary—is really just a slice through a continuum.

The QuickMask is GIMP’s way of showing you the full structure of the selection. Activating it also gives you the ability to interact with the selection in new, and substantially more powerful, ways. To activate the QuickMask, click on the small red-outlined button at the lower left of the image window. The button is a toggle, so clicking it again will return you to normal marching-ant mode. You can also activate the QuickMask by selecting in the image window menu **Select** → **Toggle QuickMask**, or by using the **Shift-Q** shortcut.

Activating the QuickMask shows you the selection as though it were a translucent screen overlying the image, whose transparency at each pixel indicates the degree to which that pixel is selected. By default the mask is shown in red, but you can change this if another mask color would be more convenient. The less a pixel is selected, the more it is obscured by the mask. Fully selected pixels are shown completely clear.

When you are in QuickMask mode, many image manipulations act on the selection channel rather than the image itself. This includes, in particular, paint tools. Painting with white causes the painted pixels to be selected; painting with black causes them to be unselected. You can use any of the paint tools, as well as the bucket fill and gradient fill tools, in this way. Advanced users of the GIMP learn that “painting the selection” is the easiest and most effective way to delicately manipulate it.

TIP



To save the selection done by the Quickmask to a new channel; Make sure that there is a selection and that Quickmask is not active in the image window. Select in the image menu **Select/Save to Channel**. This will create a new channel in the channel dialog called SelectionMask 1.

TIP



When QuickMask is active, Cut and Paste act on the selection rather than the image. You can sometimes make use of this as the most convenient way of transferring a selection from one image to another.

You can learn more on [Quickmask](#) and [Selection masks](#) in the section dedicated to the channel dialog.

2.3.3. Layers

A good way to visualize a GIMP image is as a stack of transparencies: in GIMP terminology, each individual transparency is called a *layer*. There is no limit, in principle, to the number of layers an image can have: only the amount of memory available on the system. It is not uncommon for advanced users to work with images containing dozens of layers.

The organization of layers in an image is shown by the Layers dialog, which is the second most important type of dialog window in GIMP, after the Main Toolbox. The appearance of the Layers dialog is shown in the adjoining illustration. How it works is described in detail in the [Layers Dialog](#) section, but we will touch on some aspects of it here, in relation to the layer properties that they display.

Each open image has at any time a single *active drawable*. A “drawable” is a GIMP concept that includes layers, but also several other types of things, such as channels, layer masks, and the selection mask. (Basically, a “drawable” is anything that can be drawn on with painting tools.) If a layer is currently active, it is shown highlighted in the Layers dialog, and its name is shown in the status area of the image window. If not, you can activate it by clicking on it. If none of the layers is highlighted, it means the active drawable is something other than a layer.

In the menubar above an image window, you can find a menu called **Layer**, containing a number of commands that affect the active layer of the image. The same menu can be accessed by right-clicking in the Layers dialog.

2.3.3.1. Layer properties

Each layer in an image has a number of important attributes:

Name Every layer has a name. This is assigned automatically when the layer is created, but you can change it. You can change the name of a layer either by double-clicking on it in the Layers dialog, or by right-clicking there and then selecting the top entry in the menu that appears, **Edit Layer Attributes**.

Presence or absence of an alpha channel As explained in the previous section, an alpha channel encodes information about how transparent a layer is at each pixel. It is visible in the Channel Dialog: white is complete opacity, black is complete transparency and grey levels are partial transparencies. Not every layer is required to have an alpha channel, though. In many cases, the bottom layer of an image (often named “Background”) lacks any alpha channel: this means that it is completely opaque at every point. Alphaless layers are created when you open an image from a file format that does not support transparency, or when you create a new image using **File** → **New** with a transparent Fill Type, or when you flatten an image into a single layer.

Every layer other than the bottom layer of an image must have an alpha channel. For the bottom layer, it is optional. Many operations cannot be performed on layers that lack an alpha channel. Moving the layer to a different position in the layer stack is one obvious example (since only bottom layers are allowed not to have an alpha channel), but any operation involving transparency would also be included. You can add an alpha channel to a layer that lacks one using the menu command **Layer** → **Transparency** → **Add Alpha Channel**, or by right-clicking in the Layers dialog and selecting **Add Alpha Channel** from the popup menu that appears. To remove an alpha channel, activate the bottom layer by clicking on it in the Layers dialog, and then select **Layer** → **Transparency** → **Semi-Flatten**.

Layer type The layer type is determined by the image type (see previous section) and the presence or absence of an alpha channel. These are the possible layer types:

- RGB
- RGBA
- Gray

- GrayA
- Indexed
- IndexedA

The main reason this matters is that most filters (in the **Filters** menu) only accept a subset of layer types, and appear grayed out in the menu if the active layer does not have an acceptable type. Often you can rectify this either by changing the mode of the image or by adding or removing an alpha channel.

Visibility It is possible to temporarily remove a layer from an image, without destroying it, by clicking on the “open eye” symbol in the Layers dialog. This is called “toggling the visibility” of the layer. Most operations on an image treat toggled-off layers as if they did not exist. When you work with images containing many layers, with varying opacity, you often can get a better picture of the contents of the layer you want to work on by hiding some of the other layers.


TIP



If you *Shift*-click on the eye symbol, this will cause all layers *except* the one you click on to be hidden.

Linkage to other layers If you click between the eye icon and the layer thumbnail, you get a chain icon



() , which enables you to group layers for operations on multiple layers (for example with the Move tool or a transform tool).

Size In GIMP, the boundaries of a layer do not necessarily match the boundaries of the image that contains it. When you create text, for example, each text item goes into its own separate layer, and the layer is precisely sized to contain the text and nothing more. Also, when you create a new layer using cut-and-paste, the new layer is sized just large enough to contain the pasted item. In the image window, the boundaries of the currently active layer are shown outlined with a black-and-yellow dashed line.

The main reason why this matters is that you cannot do anything to a layer outside of its boundaries: you can’t act on what doesn’t exist. If this causes you problems, you can alter the dimensions of the layer using any of several commands that you can find near the bottom of the **Layer** menu.

NOTE



The amount of memory that a layer consumes is determined by its dimensions, not its contents. So, if you are working with large images or images that contain many layers, it might pay off to trim layers to the minimum possible size.

Opacity The opacity of a layer determines the extent to which it lets colors from layers beneath it in the stack show through. Opacity ranges from 0 to 100, with 0 meaning complete transparency, and 100 meaning complete opacity.

Mode The Mode of a layer determines how colors from the layer are combined with colors from the underlying layers to produce a visible result. This is a sufficiently complex, and sufficiently important, concept to deserve a section of its own, which follows. See glossary for **Layer Modes**.

Layer mask In addition to the alpha channel, there is another way to control the transparency of a layer: by adding a *layer mask*, which is an extra grayscale drawable associated with the layer. A layer does not have a layer mask by default: it must be added specifically. Layer masks, and how to work with them, are described much more extensively in the [Layer Mask](#) section.

“Keep transparency” setting In the upper right corner of the Layers dialog appears a small checkbox that controls the “keep transparency” setting for the layer. If this is checked, then the alpha channel for the layer is locked, and no manipulation has any effect on it. In particular, nothing that you do to a transparent part of the layer will have any effect.

2.3.4. The Selection

Often when you operate on an image, you only want part of it to be affected. In GIMP, you make this happen by *selecting* that part. Each image has a *selection* associated with it. Most, but not all, GIMP operations act only on the selected portions of the image.

Figure 2.15. How would you isolate the tree?



There are many, many situations where creating just the right selection is the key to getting the result you want, and often it is not very easy to do. For example, in the above image, suppose I want to cut the tree out from its background, and paste it into a different image. In order to do this, I need to create a selection that contains the tree and nothing but the tree. It is difficult because the tree has a very complex shape, and in several spots is hard to distinguish from the objects behind it.

Figure 2.16. Selection shown as usual with dashed line



Now here is a very important point, and it is crucial to understand this. Ordinarily when you create a selection, you see it as a dashed line enclosing a portion of the image. The idea you could get from this is that the selection is a sort of container, with the selected parts of the image inside, and the unselected parts outside. This concept of the selection is okay for many purposes, but it is not really correct.

Actually the selection is implemented as a *channel*. In terms of its internal structure, it is identical to the red, green, blue, and alpha channels of an image. Thus, the selection has a value defined at each pixel of the image, ranging between 0 (unselected) and 255 (fully selected). The advantage of this approach is that it allows some pixels to be *partially selected*, by giving them intermediate values between 0 and 255. As you will see, there are many situations where it is desirable to have smooth transitions between selected and unselected regions.

What, then, is the dashed line that appears when you create a selection?

It is a *contour line*, dividing areas that are more than half selected from areas that are less than half selected.

Figure 2.17. Same selection in QuickMask mode



You should always bear in mind, when looking at the dashed line that represents the selection, that it only tells you part of the story. If you want to see the selection in complete detail, the easiest way is to click the QuickMask button in the lower left corner of the image window. This causes the selection to be shown as a translucent overlay atop the image. Selected areas are unaffected; unselected areas are reddened. The more completely selected an area is, the less red it appears.

QuickMask mode, and its uses, are described in detail below. Meanwhile, if you are following this discussion by trying things out in GIMP, you should know that many operations work differently in QuickMask mode, so go ahead and toggle it off again for now (by clicking the QuickMask button once more).

Figure 2.18. Same selection in QuickMask mode after feathering



2.3.4.1. Feathering

With the default settings, the basic selection tools, such as the Rectangle Select tool, create sharp selections. Pixels inside the dashed line are fully selected, and pixels outside completely unselected. You can verify this by toggling QuickMask: you see a clear rectangle with sharp edges, surrounded by uniform red. In the Tool Options, however, is a checkbox called “Feather edges”. If you enable this, the tool will instead create graduated selections. The feather radius, which you can adjust, determines the distance over which the transition occurs.

If you are following along, try this out with the Rectangle Select tool, and then toggle QuickMask. You will now see that the clear rectangle has a fuzzy edge.

Feathering is particularly useful when you are cutting and pasting, in helping the pasted object to blend smoothly and unobtrusively with its surroundings.

Actually, it is possible to feather a selection at any time, even if it was originally created as a sharp selection. You can do this from the image menu, by choosing **Select** → **Feather**. This brings up a dialog that allows you to set the feather radius. You can do the opposite—sharpen a graduated selection into an all-or-nothing selection—by choosing **Select** → **Sharpen**.

NOTE



For technically oriented readers: feathering works by applying a Gaussian blur to the selection channel, with the specified blurring radius.

2.3.4.2. Making a selection partially transparent

You can set layer opacity, but you cannot do that directly for a selection. It is quite useful to make the image of a glass transparent. You can achieve this by using these methods:

- For simple selections, use the Eraser tool with the wanted opacity.
- For complex selections: use the command **Selection** → **Floating** to create a floating selection. This creates a new layer called “Floating Selection”. Activate it and use the opacity slider to get the wanted opacity. Then anchor the selection: outside the selection, the mouse pointer comes with an anchor icon. When you click, the floating selection disappears from the Layer Dialog and the selection is at the right place and partially transparent (anchoring works this way only if a selection tool is activated : you can also use the command in the context menu that you get by right clicking on the selected layer in the layer dialog).

And, if you use this function frequently: **Ctrl-C** to copy the selection, **Ctrl-V** to paste it, creating so a floating selection, adapt the opacity then make Layer/New Layer that pastes the floating selection into the new layer. You can also create a shortcut for the New Layer command to use keys only.

- Another way: **Layer** → **Mask** → **Layer mask** to add a layer mask to the layer with the selection, initializing it with the selection. Then use a brush with the wanted opacity to paint the selection with black, i-e paint it with transparency. Then Layer/Mask/Apply Layer Mask. See [Section 9.2.1.3 on page 196](#).

2.3.5. Undoing

Almost anything you do to an image in GIMP can be undone. You can undo the most recent action by choosing **Edit** → **Undo** from the image menu, but this is done so frequently that you really should memorize the keyboard shortcut, **Ctrl-Z**.

Undoing can itself be undone. After having undone an action, you can *redo* it by choosing **Edit** → **Redo** from the image menu, or use the keyboard shortcut, **Ctrl-Y**. It is often helpful to judge the effect of an action by repeatedly undoing and redoing it. This is usually very quick, and does not consume any extra resources or alter the undo history, so there is never any harm in it.

CAUTION



If you undo one or more actions and then operate on the image in any way except by using Undo or Redo, it will no longer be possible to redo those actions: they are lost forever. The solution to this, if it creates a problem for you, is to duplicate the image and then operate on the copy. (*Not* the original, because the undo/redo history is not copied when you duplicate an image.)

If you often find yourself undoing and redoing many steps at a time, it may be more convenient to work with the [Undo History dialog](#), a dockable dialog that shows you a small sketch of each point in the Undo History, allowing you to go back or forward to that point by clicking.

Undo is performed on an image-specific basis: the “Undo History” is one of the components of an image. GIMP allocates a certain amount of memory to each image for this purpose. You can customize your Preferences to increase or decrease the amount, using the [Environment](#) page of the Preferences dialog. There are two important variables: the *minimal number of undo levels*, which GIMP will maintain regardless of how much memory they consume, and the *maximum undo memory*, beyond which GIMP will begin to delete the oldest items from the Undo History.

NOTE

Even though the Undo History is a component of an image, it is not saved when you save the image using GIMP's native XCF format, which preserves every other image property. When the image is reopened, it will have an empty Undo History.

The implementation of Undo by GIMP is rather sophisticated. Many operations require very little Undo memory (e.g., changing visibility of a layer), so you can perform long sequences of them before they drop out of the Undo History. Some operations (changing layer visibility is again an example) are *compressed*, so that doing them several times in a row produces only a single point in the Undo History. However, there are other operations that may consume a lot of undo memory. Most filters are examples of this: because they are implemented by plug-ins, the GIMP core has no really efficient way of knowing what they have changed, so it has no way to implement Undo except by memorizing the entire contents of the affected layer before and after the operation. You might only be able to perform a few such operations before they drop out of the Undo History.

2.3.5.1. Things that cannot be Undone

Most actions that alter an image can be undone. Actions that do not alter the image generally cannot be. This includes operations such as saving the image to a file, duplicating the image, copying part of the image to the clipboard, etc. It also includes most actions that affect the image display without altering the underlying image data. The most important example is zooming. There are, however, exceptions: toggling QuickMask on or off can be undone, even though it does not alter the image data.

There are a few important actions that do alter an image but cannot be undone:

Closing the image The Undo History is a component of the image, so when the image is closed and all of its resources are freed, the Undo History goes along. Because of this, unless the image has not been modified since the last time it was saved, GIMP always asks you to confirm that you really want to close it. (You can disable this in the **Environment** page of the Preferences dialog; if you do, you are assuming responsibility for thinking about what you are doing.)

Reverting the image “Reverting” means reloading the image from file. GIMP actually implements this by closing the image and creating a new image, so the Undo History is lost as a consequence. Because of this, if the image is unclean, GIMP always asks you to confirm that you really want to revert the image.

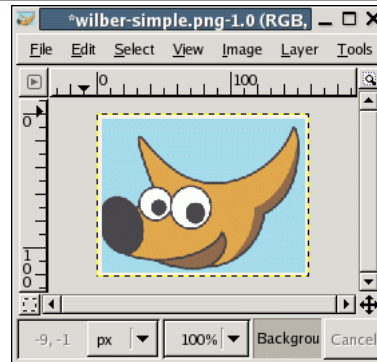
“Pieces” of actions Some tools require you to perform a complex series of manipulations before they take effect, but only allow you to undo the whole thing rather than the individual elements. For example, the Intelligent Scissors require you to create a closed path by clicking at multiple points in the image, and then clicking inside the path to create a selection. You cannot undo the individual clicks: undoing after you are finished takes you all the way back to the starting point. For another example, when you are working with the Text tool, you cannot undo individual letters, font changes, etc.: undoing after you are finished removes the newly created text layer.

Filters, and other actions performed by plugins or scripts, can be undone just like actions implemented by the GIMP core, but this requires them to make correct use of GIMP's Undo functions. If the code is not correct, a plugin can potentially corrupt the Undo History, so that not only the plugin but also previous actions can no longer properly be undone. The plugins and scripts distributed with GIMP are all believed to be set up correctly, but obviously no guarantees can be given for plugins you obtain from other sources. Also, even if the code is correct, canceling a plugin while it is running can sometimes leave the Undo History corrupted, so it is best to avoid this unless you have accidentally done something whose consequences are going to be very harmful.

2.3.6. Grids and Guides

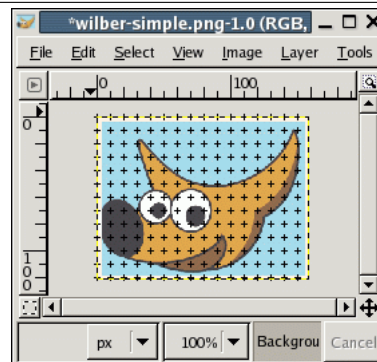
You will probably have it happen many times that you need to place something in an image very precisely, and find that it is not easy to do using a mouse. Often you can get better results by using the arrow keys on the keyboard (which move the affected object one pixel at a time, or 25 pixels if you hold down the **Shift** key), but GIMP also provides you with two other aids to make positioning easier: grids and guides.

Figure 2.19. Image used for examples below



2.3.6.1. The Image Grid

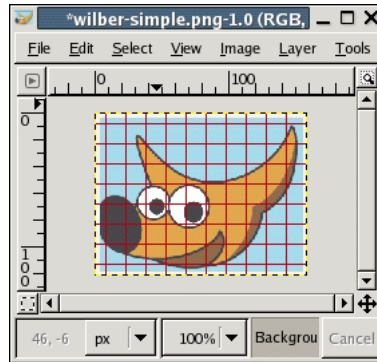
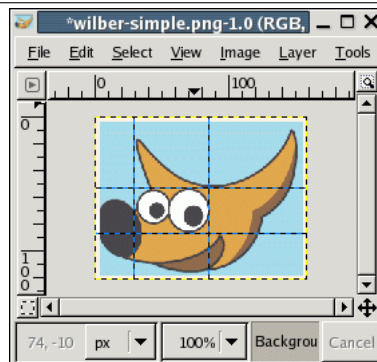
Figure 2.20. Image with default grid



Each image has a grid. It is always present, but by default it is not visible until you activate it by toggling **View** → **Show Grid** in the image menu. If you want grids to be present more often than not, you can change the default behavior by checking "Show grid" in the **Image Window Appearance** page of the Preferences dialog. (Note that there are separate settings for Normal Mode and Fullscreen Mode.)

The default grid appearance, set up when you install GIMP, consists of plus-shaped black crosshairs at the grid line intersections, with grid lines spaced every 10 pixels both vertically and horizontally. You can customize the default grid using the **Default Image Grid** page of the Preferences dialog. If you only want to change the grid appearance for the current image, you can do so by choosing **Image** → **Configure Grid** from the image menu: this brings up the **Configure Grid** dialog.

Not only can a grid be helpful for judging distances and spatial relationships, it can also permit you to align things exactly with the grid, if you toggle **View** → **Snap to Grid** in the image menu: this causes the pointer to "warp" perfectly to any grid line located within a certain distance. You can customize the snap distance threshold by setting "Snap distance" in the **Tool Options** page of the Preferences dialog, but most people seem to be happy with the default value of 8 pixels. (Note that it is perfectly possible to snap to the grid even if the grid is not visible. It isn't easy to imagine why you might want to do this, though.)

Figure 2.21. A different grid style**Figure 2.22.** Image with four guides

2.3.6.2. Guides

In addition to the image grid, GIMP also gives you a more flexible type of positioning aid: *guides*. These are horizontal or vertical lines that you create by clicking on one of the rulers and dragging into the image. You can create as many guides as you like, positioned wherever you like. To move a guide after you have created it, activate the Move tool in the Toolbox (or press the **M** key), you can then click and drag a guide. To delete a guide, simply drag it outside the image. Holding down the Shift key, you can move everything but a guide, using the guides as an effective alignment aid.

As with the grid, you can cause the pointer to snap to nearby guides, by toggling **View** → **Snap to Guides** in the image menu. If you have a number of guides and they are making it difficult for you to judge the image properly, you can hide them by toggling **View** → **Show Guides**. It is suggested that you only do this momentarily, otherwise you may get confused the next time you try to create a guide and don't see anything happening.

If it makes things easier for you, you can change the default behavior for guides in the **Image Window Appearance** page of the Preferences dialog. Disabling "Show guides" is probably a bad idea, though, for the reason just given.

NOTE



Another use for guides: the **Guillotine** plugin can use guides to slice an image into a set of sub-images.

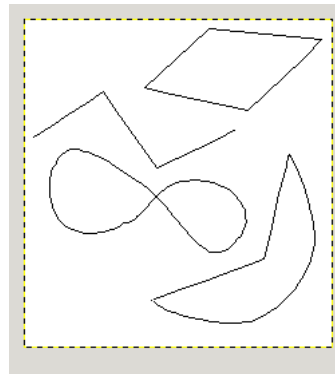
NOTE



See also **Guides** in Glossary.

2.3.7. Paths

Figure 2.23. Four examples of GIMP paths. Four examples of GIMP paths: one closed and polygonal; one open and polygonal; one closed and curved; one with a mixture of straight and curved segments.

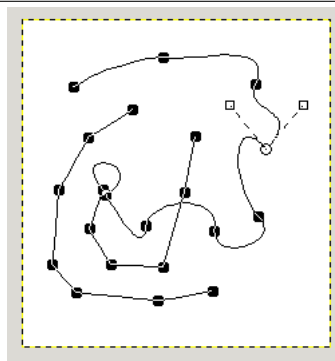


A *path* is a one-dimensional curve. Paths are used for two main purposes:

- A closed path can be converted into a selection.
- An open or closed path can be *stroked*, that is, painted on the image, in a variety of ways.

Paths can be created and manipulated using the **Path tool**. Paths, like layers and channels, are components of an image. When an image is saved in GIMP's native XCF file format, any paths it has are saved along with it. The list of paths in an image can be viewed and operated on using the **Paths dialog**. If you want to move a path from one image to another, you can do so by copying and pasting using the popup menu in the Paths dialog, or by dragging an icon from the Paths dialog into the destination image's window.

Figure 2.24. Appearance of a path while it is being manipulated using the Path tool.. Black squares are anchor points, the open circle is the selected anchor, and the two open squares are its handles. Note that this path has two components.



GIMP paths belong to a mathematical type called “Bezier paths”. What this means in practical terms is that they are defined by *anchors* and *handles*. “Anchors” are points the path goes through. “Handles” define the direction of a path when it enters or leaves an anchor point: each anchor point has two handles attached to it.

Paths can be very complex. If you create them by hand using the Path tool, unless you are obsessive they probably won't contain more than a few dozen anchor points (often many fewer); but if you create them by transforming a selection into a path, or by transforming text into a path, the result can easily contain hundreds of anchor points, or even thousands.

A path may contain multiple *components*. A “component” is a part of a path whose anchor points are all connected to each other by path segments. The ability to have multiple components in paths allows you to convert them into selections having multiple disconnected parts.

Each component of a path can be either *open* or *closed*: “closed” means that the last anchor point is connected to the first anchor point. If you transform a path into a selection, any open components are automatically converted into closed components by connecting the last anchor point to the first anchor point with a straight line.

Path segments can be either straight or curved. A path all of whose segments are straight is called “polygonal”. When you create a path segment, it starts out straight, because the handles for the anchor points are initially placed directly on top of the anchor points, yielding handles of zero length, which produce straight-line segments. You can make a segment curved by dragging a handle away from one of the anchor points.

One nice thing about paths is that they are very light in terms of resource consumption, especially in comparison with images. Representing a path in RAM only requires storing the coordinates of its anchors and handles: 1K of memory is enough to hold quite a complex path, but not enough to hold even a 20x20 pixel RGB layer. Therefore, it is quite possible to have literally hundreds of paths in an image without putting any significant stress on your system. (How much stress managing them would put on *you* is, of course, another question.) Even a path with thousands of segments consumes minimal resources in comparison to a typical layer or channel.

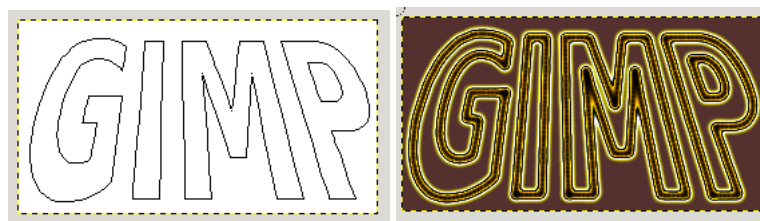
2.3.7.1. Paths and Selections

GIMP lets you transform the selection for an image into a path; it also lets you transform paths into selections. For information about the selection and how it works, see the [Selection](#) section.

When you transform a selection into a path, the path closely follows the “marching ants”. Now, the selection is a two-dimensional entity, but a path is a one-dimensional entity, so there is no way to transform the selection into a path without losing information. In fact, any information about partially selected areas (i.e., feathering) will be lost when the selection is turned into a path. If the path is transformed back into a selection, the result is an all-or-none selection, similar to what would be obtained by executing “Sharpen” from the Select menu.

2.3.7.2. Paths and Text

Figure 2.25. Text converted to a path



(a) Text converted to a path and then transformed using the Perspective tool. (b) The path shown above, stroked with a fuzzy brush and then gradient-mapped using the Gradient Map filter with the “Yellow Contrast” gradient.

A text item created using the Text tool can be transformed into a path using the **Create path from text** button in the Tool Options for the Text tool. This can be useful for several purposes, including:

- Stroking the path, which gives you many possibilities for fancy text.
- More importantly, transforming the text. Converting text into a path, then transforming the path, and finally either stroking the path or converting it to a selection and filling it, often leads to much higher-quality results than rendering the text as a layer and transforming the pixel data.

2.3.7.3. Paths and SVG files

SVG, standing for “Scalable Vector Graphics”, is an increasingly popular file format for *vector graphics*, in which graphical elements are represented in a resolution-independent format, in contrast to *raster graphics*; in which graphical elements are represented as arrays of pixels. GIMP is mainly a raster graphics program, but paths are vector entities.

Fortunately, paths are represented in SVG files in almost exactly the same way they are represented in GIMP. (Actually fortune has nothing to do with it: GIMP’s path handling was rewritten for GIMP 2.0 with SVG paths in mind.) This compatibility makes it possible to store GIMP paths as SVG files without losing any information. You can access this capability in the Paths dialog.

It also means that GIMP can create paths from SVG files saved in other programs, such as Inkscape or Sodipodi, two popular open-source vector graphics applications. This is nice because those programs have much more powerful path-manipulation tools than GIMP does. You can import a path from an SVG file using the Paths dialog.

The SVG format handles many other graphical elements than just paths: among other things, it handles figures such as squares, rectangles, circles, ellipses, regular polygons, etc. GIMP 2.0 cannot do anything with these entities, but GIMP 2.2 can load them as paths.

NOTE



Creating paths is not the only thing GIMP can do with SVG files. It can also open SVG files as GIMP images, in the usual way.

2.3.8. Brushes

Figure 2.26. Brush strokes example. A number of examples of brushstrokes painted using different brushes from the set supplied with GIMP. All were painted using the Paintbrush tool.



A *brush* is a pixmap or set of pixmaps used for painting. GIMP includes a set of 10 “paint tools”, which not only perform operations that you would think of as painting, but also operations such as erasing, copying, smudging, lightening or darkening, etc. All of the paint tools, except the ink tool, use the same set of brushes. The brush pixmaps represent the marks that are made by single “touches” of the brush to the image. A brush stroke, usually made by moving the pointer across the image with the mouse button held down, produces a series of marks spaced along the trajectory, in a way specified by the characteristics of the brush and the paint tool being used.

Brushes can be selected by clicking on an icon in the **Brushes dialog**. GIMP’s *current brush* is shown in the Brush/Pattern/Gradient area of the Toolbox. Clicking on the brush symbol there is one way of activating the Brushes dialog.

When you install GIMP, it comes presupplied with a number of basic brushes, plus a few bizarre ones that serve mainly to give you examples of what is possible (i. e., the “green pepper” brush in the illustration). You can also create new brushes, or download them and install them so that GIMP will recognize them.

GIMP can use several different types of brushes. All of them, however, are used in the same way, and for most purposes you don't need to be aware of the differences when you paint with them. Here are the available types of brushes:

Ordinary brushes Most of the brushes supplied with GIMP fall into this category. They are represented in the Brushes dialog by grayscale pixmaps. When you paint using them, the current foreground color (as shown in the Color Area of the Toolbox) is substituted for black, and the pixmap shown in the brushes dialog represents the mark that the brush makes on the image.

To create such a brush: Create a small image in gray levels using zoom. Save it with the .gbr extension. Click on Refresh button in the Brush Dialog to get it in preview without it being necessary to restart GIMP.

Color brushes Brushes in this category are represented by colored images in the Brushes dialog. They can be a text. When you paint with them, the colors are used as shown; the current foreground color does not come into play. Otherwise they work the same way as ordinary brushes.

To create such a brush: Create a small RGBA image. For this, open New Image, select RGB for image type and Transparent for fill type. Draw your image and save it first to .xcf file to keep its properties. Then save it to .gbr format. Click on *Refresh* button in Brush Dialog to get your brush without it being necessary to restart Gimp.

TIP



You can transform a selection to a brush by using the command: **Script-fu**
→ **Selection** → **To Brush**.

Image hoses / Image pipes Brushes in this category can make more than one kind of mark on an image. They are indicated by small red triangles at the lower right corner of the brush symbol in the Brushes dialog. They are sometimes called "animated brushes" because the marks change as you trace out a brushstroke. In principle, image hose brushes can be very sophisticated, especially if you use a tablet, changing shape as a function of pressure, angle, etc. These possibilities have never really been exploited, however; and the ones supplied with GIMP are relatively simple (but still quite useful).

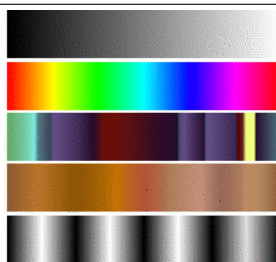
You will find an example on how to create such brushes in [Animated brushes](#)

Parametric brushes These are brushes created using the [Brush Editor](#), which allows you to generate a wide variety of brush shapes by using a simple graphical interface. A nice feature of parametric brushes is that they are *resizable*. In GIMP 2.2, it is possible, using the Preferences dialog, to make key presses or mouse wheel rotations cause the current brush to become larger or smaller, if it is a parametric brush.

One category that GIMP does not have is full-fledged *procedural* brushes: brushes whose marks are calculated procedurally, instead of being taken from a fixed pixmap. (Actually this is not quite correct: the Ink tool uses a procedural brush, but it is the only one available in GIMP.) A more extensive implementation of procedural brushes is a goal of future development for GIMP.

In addition to the brush pixmap, each GIMP brush has one other important property: the brush *Spacing*. This represents the distance between consecutive brush-marks when a continuous brushstroke is painted. Each brush has an assigned default value for this, which can be modified using the Brushes dialog.

Figure 2.27. Some examples of GIMP gradients.. Gradients from top to bottom: FG to BG (RGB); Full saturation spectrum; Nauseating headache; Browns; Four bars



2.3.9. Gradients

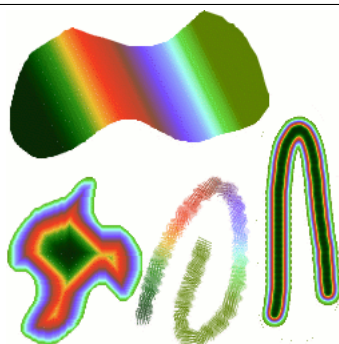
A *gradient* is a set of colors arranged in a linear order. The most basic use of gradients is by the **Blend tool**, sometimes known as the “gradient tool” or “gradient fill tool”: it works by filling the selection with colors from a gradient. You have many options to choose from for controlling the way the gradient colors are arranged within the selection. There are also other important ways to use gradients, including:

Painting with a gradient Each of GIMP’s basic painting tools allows you the option of using colors from a gradient. This enables you to create brushstrokes that change color from one end to the other.

The Gradient Map filter This filter allows you to “colorize” a grayscale image, by replacing each shade of gray with the corresponding color from a gradient. See [Section 11.3.8 on page 363](#) for more information.

When you install GIMP, it comes presupplied with a large number of interesting gradients, and you can add new ones that you create or download from other sources. You can access the full set of available gradients using the **Gradients dialog**, a dockable dialog that you can either activate when you need it, or keep around as a tab in a dock. The “current gradient”, used in most gradient-related operations, is shown in the Brush/Pattern/Gradient area of the Toolbox. Clicking on the gradient symbol in the Toolbox is an alternative way of bringing up the Gradients dialog.

Figure 2.28. Gradient usage. Four ways of using the Tropical Colors gradient: a linear gradient fill, a shaped gradient fill, a stroke painted using colors from a gradient, and a stroke painted with a fuzzy brush then colored using the Gradient Map filter.



A few useful things to know about GIMP’s gradients:

- The first four gradients in the list are special: they use the Foreground and Background colors from the Toolbox Color Area, instead of being fixed. **FG to BG (RGB)** is the RGB representation of the gradient from the Foreground color to the Background color in Toolbox. **FG to BG (HSV counter-clockwise)** represents the hue succession in Color Circle from the selected hue to 360°. **FG to BG (HSV clockwise)** represents the hue succession in Color Circle from the selected hue to 0°. With **FG to transparent**, the selected hue becomes more and more transparent. You can

modify these colors by using the Color Selector. Thus, by altering the foreground and background colors, you can make these gradients transition smoothly between any two colors you want.

- Gradients can involve not just color changes, but also changes in opacity. Some of the gradients are completely opaque; others include transparent or translucent parts. When you fill or paint with a non-opaque gradient, the existing contents of the layer will show through behind it.
- You can create new *custom* gradients, using the **Gradient Editor**. You cannot modify the gradients that are supplied with GIMP, but you can duplicate them or create new ones, and then edit those.

The gradients that are supplied with GIMP are stored in a system `gradients` folder. By default, gradients that you create are stored in a folder called `gradients` in your personal GIMP directory. Any gradient files (ending with the extension `.ggr`) found in one of these folders, will automatically be loaded when you start GIMP. You can add more directories to the gradient search path, if you want to, in the Gradients tab of the **Data Folders** pages of the Preferences dialog.

New in GIMP 2.2 is the ability to load gradient files in SVG format, used by many vector graphics programs. To make GIMP load an SVG gradient file, all you need to do is place it in the `gradients` folder of your personal GIMP directory, or any other folder in your gradient search path.

TIP



You can find a large number of interesting SVG gradients on the web, in particular at OpenClipArt Gradients <<http://openclipart.org/cgi-bin/navigate/Gradients>>. You won't be able to see what these gradients look like unless your browser supports SVG, but that won't prevent you from downloading them.

2.3.10. Patterns

A *pattern* is an image, usually small, used for filling regions by *tiling*, that is, by placing copies of the pattern side by side like ceramic tiles. A pattern is said to be *tileable* if copies of it can be adjoined left-edge-to-right-edge and top-edge-to-bottom-edge without creating obvious seams. Not all useful patterns are tileable, but tileable patterns are nicest for many purposes. (A *texture*, by the way, is the same thing as a pattern.)

Figure 2.29. Pattern usage. Three ways of using the “Leopard” pattern: bucket-filling a selection, painting with the Clone tool, and stroking an elliptical selection with the pattern.



In GIMP there are three main uses for patterns:

- With the **Bucket Fill** tool, you can choose to fill a region with a pattern instead of a solid color.
- With the **Clone** tool, you can paint using a pattern, with a wide variety of paintbrush shapes.
- When you *stroke* a path or selection, you can do it with a pattern instead of a solid color. You can also use the Clone tool as your choice if you stroke the selection using a painting tool.

TIP



Note: Patterns do not need to be opaque. If you fill or paint using a pattern with translucent or transparent areas, then the previous contents of the area will show through from behind it. This is one of many ways of doing “overlays” in GIMP.

When you install GIMP, it comes presupplied with a few dozen patterns, which seem to have been chosen more or less randomly. You can also add new patterns, either ones you create yourself, or ones you download from the vast number available online.

GIMP’s *current pattern*, used in most pattern-related operations, is shown in the Brush/Pattern/Gradient area of the Toolbox. Clicking on the pattern symbol brings up the **Patterns dialog**, which allows you to select a different pattern. You can also access the Patterns dialog by menu, or dock it so that it is present continuously.

To add a new pattern to the collection, so that it shows up in the Patterns dialog, you need to save it in a format GIMP can use, in a folder included in GIMP’s pattern search path. There are several file formats you can use for patterns:

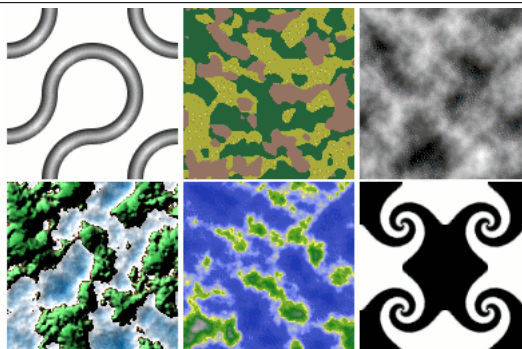
PAT The .pat format is used only by GIMP, so you will not find patterns in this format unless they were created specifically for GIMP. You can, however, convert any image into a .pat file by opening it in GIMP and then saving it using a file name ending in .pat.

PNG, JPEG, BMP, GIF, TIFF New in GIMP 2.2 is the ability to use .png, .jpg, .bmp, .gif, or .tiff files as patterns.

To make a pattern available, you place it in one of the folders in GIMP’s pattern search path. By default, the pattern search path includes two folders, the system `patterns` folder, which you should not use or alter, and the `patterns` folder inside your personal GIMP directory. You can add new folders to the pattern search path using the **Pattern Folders** page of the Preferences dialog. Any PAT file (or, in GIMP 2.2, any of the other acceptable formats) included in a folder in the pattern search path will show up in the Patterns dialog the next time you start GIMP.

There are countless ways of creating interesting patterns in GIMP, using the wide variety of available tools and filters – particularly the rendering filters. You can find tutorials for this in many locations, including the Gimp home page <www.gimp.org>. Some of the filters have options that allow you to make their results tileable. Also, the **Tileable Blur** filter allows you to blend the edges of an image in order to make it more smoothly tileable.

Figure 2.30. Pattern script examples. Examples of patterns created using six of the Pattern script-fu’s that come with GIMP. Default settings were used for everything except size. (From left to right: 3D Truchet; Camouflage; Flatland; Land; Render Map; Swirly)



Also of interest are a set of pattern-generating scripts that come with GIMP: you can find them in the Toolbox menu, under **Xtns** → **Script-Fu** → **Patterns**. Each of the scripts creates a new image filled with

a particular type of pattern: a dialog pops up that allows you to set parameters controlling the details of the appearance. Some of these patterns are most useful for cutting and pasting; others serve best as bumpmaps.

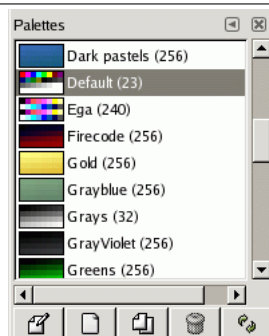
2.3.11. Palettes

A *palette* is a set of discrete colors. In GIMP, palettes are used mainly for two purposes:

- They allow you to paint with a selected set of colors, in the same way an oil painter works with colors from a limited number of tubes.
- They form the colormaps of indexed images. An indexed image can use a maximum of 256 different colors, but these can be any colors. The colormap of an indexed image is called an “indexed palette” in GIMP.

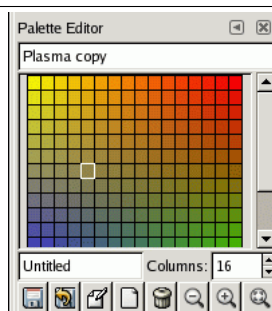
Actually neither of these functions fall very much into the mainstream of GIMP usage: it is possible to do rather sophisticated things in GIMP without ever dealing with palettes. Still, they are something that an advanced user should understand, and even a less advanced user may need to think about them in some situations, as for example when working with GIF files.

Figure 2.31. The Palettes dialog



When you install GIMP, it comes supplied with several dozen predefined palettes, and you can also create new ones. Some of the predefined palettes are commonly useful, such as the “Web” palette, which contains the set of colors considered “web safe”; many of the palettes seem to have been chosen more or less whimsically. You can access all of the available palettes using the [Palettes dialog](#). This is also the starting point if you want to create a new palette.

Figure 2.32. The Palette Editor



Double-clicking on a palette in the Palettes dialog brings up the [Palette Editor](#), showing the colors from the palette you clicked on. You can use this to paint with the palette: clicking on a color sets GIMP’s foreground to that color, as shown in the Color Area of the Toolbox. Holding down the **Ctrl** key while clicking, on the other hand, sets GIMP’s background color to the color you click on.

You can also, as the name implies, use the Palette Editor to change the colors in a palette, so long as it is a palette that you have created yourself. You cannot edit the palettes that are supplied with GIMP; however you can duplicate them and then edit the copies.

When you create palettes using the Palette Editor, they are automatically saved as soon as you exit GIMP, in the `palettes` folder of your personal GIMP directory. Any palette files in this directory, or in the system `palettes` directory created when GIMP is installed, are automatically loaded and shown in the Palettes dialog the next time you start GIMP. You can also add other folders to the palette search path using the [Palette Folders](#) page of the Preferences dialog.

GIMP palettes are stored using a special file format, in files with the extension `.gpl`. It is a very simple format, and they are ASCII files, so if you happen to obtain palettes from another source, and would like to use them in GIMP, it probably won't be very hard to convert them: just take a look at any `.gpl` and you will see what to do.

2.3.11.1. Colormap

Confusingly, GIMP makes use of two types of palettes. The more noticeable are the type shown in the Palettes dialog: palettes that exist independently of any image. The second type, *indexed palettes*, form the colormaps of indexed images. Each indexed image has its own private indexed palette, defining the set of colors available in the image: the maximum number of colors allowed in an indexed palette is 256. These palettes are called “indexed” because each color is associated with an index number. (Actually, the colors in ordinary palettes are numbered as well, but the numbers have no functional significance.)

Figure 2.33. The Colormap dialog



The colormap of an indexed image is shown in the [Indexed Palette dialog](#), which should not be confused with the Palettes dialog. The Palettes dialog shows a list of all of the palettes available; the Colormap dialog shows the colormap of the currently active image, if it is an indexed image - otherwise it shows nothing.

You can, however, create an ordinary palette from the colors in an indexed image—actually from the colors in any image. To do this, choose **Import Palette** from the right-click popup menu in the Palettes dialog: this pops up a dialog that gives you several options, including the option to import the palette from an image. (You can also import any of GIMP's gradients as a palette.) This possibility becomes important if you want to create a set of indexed images that all use the same set of colors.

When you convert an image into indexed mode, a major part of the process is the creation of an indexed palette for the image. How this happens is described in detail in [Section 10.9.6 on page 304](#). Briefly, you have several methods to choose from, one of which is to use a specified palette from the Palettes dialog.

Thus, to sum up the foregoing, ordinary palettes can be turned into indexed palettes when you convert an image into indexed mode; indexed palettes can be turned into ordinary palettes by importing them into the Palettes dialog.

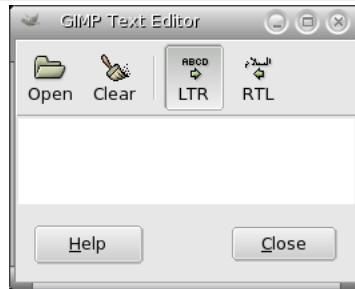
2.3.12. Text and Fonts

One of the greatest improvements of GIMP 2.0 over GIMP 1.2 is in the handling of text. In GIMP 2.0 and 2.2, each text item goes in a separate Text layer, and you can come back later to the layer and edit the text in it. You can also move the text around in the image, or change the font, or the font size. You can use any font available on your system. You can control justification, indentation, and line spacing.

Figure 2.34. Example of a text item. Example of a text item, showing the boundary of the text layer. (Font: Utopia Bold)



Figure 2.35. GIMP text editor



Actually, you can operate on a text layer in the same ways as any other layer, but doing so often means giving up the ability to edit the text without losing the results of your work.

To understand some of the idiosyncrasies of text handling, it may help for you to realize that a text layer contains more information than the pixel data that you see: it also contains a representation of the text in a text-editor format. You can see this in the text-editor window that pops up while you are using the Text tool. Every time you alter the text, the image layer is redrawn to reflect your changes.

Now suppose you create a text layer, and then operate on it in some way that does not involve the Text tool: rotate it, for example. Suppose you then come back and try to edit it using the Text tool. As soon as you edit the text, the Text tool will redraw the layer, wiping out the results of the operations you performed in the meantime.

Because this danger is not obvious, the Text tool tries to protect you from it. If you operate on a text layer, and then later try to edit the text, a message pops up, warning you that your alterations will be undone, and giving you three options: (1) edit the text anyway; (2) cancel; (3) create a new text layer with the same text as the existing layer, leaving the existing layer unchanged.

3. Getting Unstuck

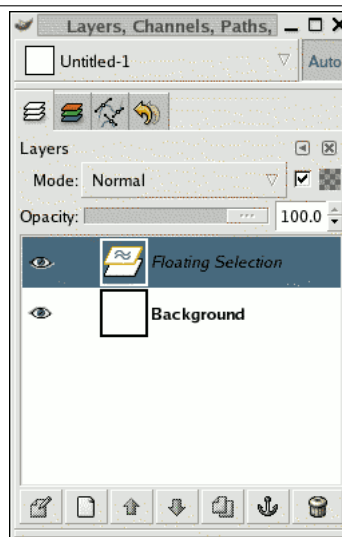
3.1. Stuck!

All right, okay: you're stuck. You're trying to use one of the tools on an image, and nothing is happening, and nothing you try makes any difference. Your fists are starting to clench, and your face is starting to feel warm. Are you going to have to kill the program, and lose all your work? This sucks!

Well, hold on a second. This happens pretty frequently, even to people who've used the GIMP for a long time, but generally the cause is not so hard to figure out (and fix) if you know what to look at. Let's be calm, and go through a checklist that will probably get you GIMPing happily again.

3.2. Common causes of GIMP non-responsiveness

Figure 3.1. Layers dialog showing a floating selection.



There is a floating selection

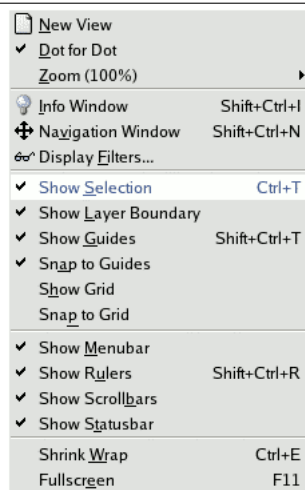
How to tell: If there is a floating selection, many actions are impossible until it is anchored. To check, look at the Layers dialog (making sure it's set to the image you're working on) and see whether the top layer is called "Floating Selection".

How to solve: Either anchor the floating selection, or convert it into an ordinary (non-floating) layer. If you need help on how to do this, see [Floating Selections](#).

How to tell: If this is the problem, merely reading this will already have made you realize it, probably, but to explain in any case: sometimes the flickering line that outlines the selection is annoying because it makes it hard to see important details of the image, so GIMP gives you the option of hiding the selection, by unchecking **Show Selection** in the **View** menu. It is easy to forget that you have done this, though.

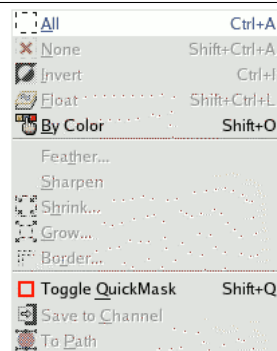
How to fix: If this hasn't rung any bells, it isn't the problem, and if it has, you probably know how to fix it, because it doesn't happen unless you explicitly tell it to; but anyway: just go to the **View** menu for the image and, if **Show Selection** is unchecked, click on it..

Figure 3.2. Unstuck show selection menu. In the View menu, make sure that “Show Selection” is checked.



The selection is hidden

Figure 3.3. Unstuck select all. Click “All” in the Select menu to make sure that everything is selected.



You are acting outside of the selection

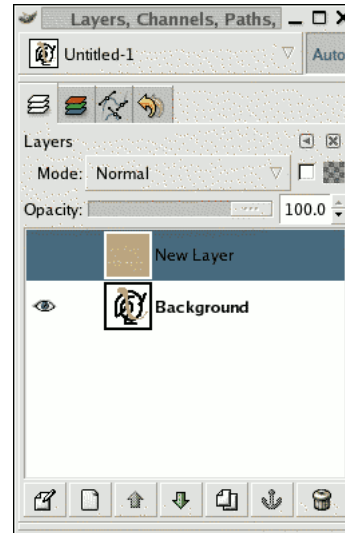
How to fix: If doing this has destroyed a selection that you wanted to keep, hit Ctrl-Z (undo) a couple of times to restore it, and then we’ll figure out what the problem is. There are a couple of possibilities. If you couldn’t see any selection, there may have been a very tiny one, or even one that contained no pixels. If this was the case, it surely is not a selection that you wanted to keep, so why have you gotten this far in the first place? If you can see a selection but thought you were inside it, it might be inverted from what you think. The easiest way to tell is to hit the Quick Mask button: the selected area will be clear and the unselected area will be masked. If this was the problem, then you can solve it by toggling Quick Mask off and choosing Invert in the **Select** menu.

How to tell: The Layers dialog gives you ability to toggle the visibility of each layer on or off. Look at the Layers dialog, and see whether the layer you are trying to act on is active (i.e., darkened) and has an eye symbol to the left of it. If not, this is your problem.

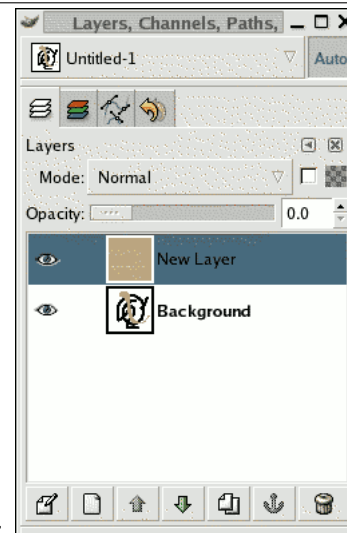
How to fix: If your intended target layer is not active, click on it in the Layers dialog to activate it. (If none of the layers there is active, the active drawable might be a channel – you can look at the Channels tab in the Layers dialog to see. This does not change the solution, though.) If the eye symbol does not appear, click in the Layers dialog at the left edge to toggle it: this should make the layer visible. See the Help section for the **Layers Dialog** if you need more help.

How to fix: Move the slider.

You are trying to act outside the layer **How to tell:** In GIMP, layers don’t need to have the same dimensions as the image: they can be larger or smaller. If you try to paint outside the borders of a

Figure 3.4. Unstuck layer invisibility. Layers dialog with visibility off for the active layer.

The active drawable is not visible

Figure 3.5. Unstuck layer transparency. Layers dialog with opacity set to zero for the active layer.

The active drawable is transparent

layer, nothing happens. To see if this is happening, look for a black-and-yellow dashed rectangle that does not enclose the area you're trying to draw at.

How to fix: You need to enlarge the layer. There are two commands at the bottom of the Layer menu that will let you do this: Layer to Image Size, which sets the layer bounds to match the image borders; and Layer Boundary Size, which brings up a dialog that allows you to set the layer dimensions to whatever you please.

The image is in indexed color mode. **How to tell:** GIMP can handle three different color modes: **RGB(A)**, **Indexed** and **Grayscale**. The indexed colormap uses a colormap, where all used colors on the image are indexed. The **color picker** in GIMP however, let you choose RGB colors. That means, if you try to paint with a different color than it is indexed in the colormap, you end up in very undetermined results (e.g. it paints with the wrong color or you can't paint).

How to fix: Always use the RGB Color mode to paint on images. You can verify and select another color mode from the **Mode** menu item in the **Image** menu.

Part II.

How to become the GIMP wizard?

4. Concepts for the intermediate

4.1. Plugins

4.1.1. Introduction

One of the nicest things about GIMP is how easily its functionality can be extended, by using plugins. GIMP plugins are external programs that run under the control of the main GIMP application and interact with it very closely. Plugins can manipulate images in almost any way that users can. Their advantage is that it is much easier to add a capability to GIMP by writing a small plugin than by modifying the huge mass of complex code that makes up the GIMP core. Many valuable plugins have C source code that only comes to 100-200 lines or so.

Several dozen plugins are included in the main GIMP distribution, and installed automatically along with GIMP. Most of them can be accessed through the **Filters** menu (in fact, everything in that menu is a plugin), but a number are located in other menus. In many cases you can use one without ever realizing that it is a plugin: for example, the "Normalize" function for automatic color correction is actually a plugin, although there is nothing about the way it works that would tell you this.

In addition to the plugins included with GIMP, many more are available on the net. A large number can be found at the GIMP Plugin Registry <<http://registry.gimp.org>>, a web site whose purpose is to provide a central repository for plugins. Creators of plugins can upload them there; users in search of plugins for a specific purpose can search the site in a variety of ways.

Anybody in the world can write a GIMP plugin and make it available over the web, either via the Registry or a personal web site, and many very valuable plugins can be obtained in this way some are described elsewhere in the User's Manual. With this freedom from constraint comes a certain degree of risk, though: the fact that anybody can do it means that there is no effective quality control. The plugins distributed with GIMP have all been tested and tuned by the developers, but many that you can download were just hacked together in a few hours and then tossed to the winds. Some plugin creators just don't care about robustness, and even for those who do, their ability to test on a variety of systems in a variety of situations is often quite limited. Basically, when you download a plugin, you are getting something for free, and sometimes you get exactly what you pay for. This is not said in an attempt to discourage you, just to make sure you understand reality.

WARNING



Plugins, being full-fledged executable programs, can do any of the things that any other program can do, including install back-doors on your system or otherwise compromise its security. Don't install a plugin unless it comes from a trusted source.

These caveats apply as much to the Plugin Registry as to any other source of plugins. The Registry is available to any plugin creator who wants to use it: there is no systematic oversight. Obviously if the maintainers became aware that something evil was there, they would remove it. (That hasn't happened yet.) There is, however, for GIMP and its plugins the same warranty as for any other free software: namely, none.

CAUTION

Plugins have been a feature of GIMP for many versions. However, plugins written for one version of GIMP can hardly ever be used successfully with other versions. They need to be ported: sometimes this is easy, sometimes not. Many plugins are already available in several versions. Bottom line: before trying to install a plugin, make sure that it is written for your version of GIMP.

4.1.2. Using Plugins

For the most part you can use a plugin like any other GIMP tool, without needing to be aware that it is a plugin. But there are a few things about plugins that are useful to understand.

One is that plugins are generally not as robust as the GIMP core. When GIMP crashes, it is considered a very serious thing: it can cost the user a lot of trouble and headache. When a plugin crashes, the consequences are usually not so serious. In most cases you can just continue working without worrying about it.

NOTE

Because plugins are separate programs, they communicate with the Gimp core in a special way: the Gimp developers call it “talking over a wire”. When a plugin crashes, the communication breaks down, and you will see an error message about a “wire read error”.

TIP

When a plugin crashes, GIMP gives you a very ominous-looking message telling you that the plugin may have left GIMP in a corrupted state, and you should consider saving your images and exiting. Strictly speaking, this is quite correct, because plugins have the power to alter almost anything in GIMP, but for practical purposes, experience has shown that corruption is actually quite rare, and many users just continue working and don't worry about it. Our advice is that you simply think about how much trouble it would cause you if something went wrong, and weigh it against the odds.

Because of the way plugins communicate with GIMP, they do not have any mechanism for being informed about changes you make to an image after the plugin has been started. If you start a plugin, and then alter the image using some other tool, the plugin will often crash, and when it doesn't will usually give a bogus result. You should avoid running more than one plugin at a time on an image, and avoid doing anything to the image until the plugin has finished working on it. If you ignore this advice, not only will you probably screw up the image, you will probably screw up the undo system as well, so that you won't even be able to recover from your foolishness.

4.1.3. Installing New Plugins

The plugins that are distributed with GIMP don't require any special installation. Plugins that you download yourself do. There are several scenarios, depending on what OS you are using and how the plugin is structured. In Linux it is usually pretty easy to install a new plugin; in Windows, it is either easy or very hard. In any case, the two are best considered separately.

4.2. Linux

Most plugins fall into two categories: small ones whose source code is distributed as a single `.c` file, and larger ones whose source code is distributed as a directory containing multiple files including a `Makefile`.

For a simple one-file plugin, call it `borker.c`, installing it is just a matter of running the command **gimptool-2.0 --install borker.c**. This command compiles the plugin and installs it in your personal plugin directory, `~/gimp-2.2/plugins` unless you have changed it. This will cause it to be loaded automatically the next time you start GIMP. You don't need to be root to do these things; in fact, you shouldn't be. If the plugin fails to compile, well, be creative.

Once you have installed the plugin, how do you activate it? The menu path is determined by the plugin itself, so to answer this you need to either look at the documentation for the plugin (if there is any), or launch the Plugin Description dialog (from Xtns/Plugins Details) search the plug-in by its name and look at the **Tree view** tab. If you still don't find, finally explore the menus or look at the source code in the Register section – whichever is easiest.

For more complex plugins, organized as a directory with multiple files, there ought to be a file inside called either `INSTALL` or `README`, with instructions. If not, the best advice is to toss the plugin in the trash and spend your time on something else: any code written with so little concern for the user is likely to be frustrating in myriad ways.

Some plugins (specifically those based on the GIMP Plugin Template) are designed to be installed in the main system GIMP directory, rather than your home directory. For these, you will need to be root to perform the final stage of installation (“make install”).

If you install in your personal plugin directory a plugin that has the same name as one in the system plugin directory, only one can be loaded, and it will be the one in your home directory. You will receive messages telling you this each time you start GIMP. This is probably a situation best avoided.

4.3. Windows

Windows is a much more problematic environment for building software than Linux. Every decent Linux distribution comes fully supplied with tools for compiling software, and they are all very similar in the way they work, but Windows does not come with such tools. It is possible to set up a good software-building environment in Windows, but it requires either a substantial amount of money or a substantial amount of effort and knowledge.

What this means in relation to GIMP plugins is the following: either you have an environment in which you can build software, or you don't. If you don't, then your best hope is to find a precompiled version of the plugin somewhere (or persuade somebody to compile it for you), in which case you simply need to put it into your personal plugin directory. If you do have an environment in which you can build software (which for present purposes means an environment in which you can build GIMP), then you no doubt already know quite a bit about these things, and just need to follow the Linux instructions.

If you would like to set up a build environment, and are ready for the heroism involved, you can find a reasonably recent description of how to go about it in the GIMP Wiki, at [HowToCompileGimp/MicrosoftWindows](http://wiki.gimp.org/gimp/HowToCompileGimp.2fMicrosoftWindows) <<http://wiki.gimp.org/gimp/HowToCompileGimp.2fMicrosoftWindows>>. Since it is a Wiki, anybody is free to edit it, so please keep it up to date by adding advice based on your own experiences.

4.4. Macintosh

We could use some material here.

4.4.1. Writing Plugins

If you want to learn how to write a plugin, you can find plenty of help at the GIMP Developers web site, developer.gimp.org <<http://developer.gimp.org/plugin-ins.html>>. GIMP is a complex program, but the development team has made strenuous efforts to flatten the learning curve for plugin writing: there are good instructions and examples, and the main library that plugins use to interface with Gimp (called “libgimp”) has a well-documented API. Good programmers, learning by modifying existing plugins, are often able to accomplish interesting things after just a couple of days of work.

4.5. Using Script-Fu Scripts

4.6. Script-Fu?

Script-Fu is what the Windows world would call “macros”. But Script-Fu is more powerful than that. Script-Fu is based on an interpreting language called Scheme, and works by using querying functions to the Gimp database. You can do all kinds of things with Script-Fu, but an ordinary Gimp user will probably use it for automating things that:

- You want to do frequently.
- Are really complicated to do, and hard to remember.

Remember that you can do a whole lot with Script-Fu. The scripts that come with Gimp can be quite useful, but they can also serve as models for learning Script-Fu, or at least as a framework and source of modification when you make your own script. Read the Script-Fu Tutorial in the next section if you want to learn more about how to make scripts.

We will describe some of the most useful scripts in this chapter, but we won’t cover them all. There are simply too many scripts. Some of the scripts are also very simple and you will probably not need any documentation to be able to use them.

Script-Fu (a dialect of Scheme) isn’t the only scripting language available for Gimp. But Script-Fu is the only scripting language that is installed by default. Other available scripting extensions are Perl and Tcl. You can download and install both extensions at the Gimp Plugin Registry <<http://registry.gimp.org>>.

4.7. Installing Script-Fus

One of the great things about Script-Fu is that you can share your script with all your Gimp friends. There are many scripts that come with Gimp by default, but there are also vast quantities of scripts that are available for download all around the Internet.

1. If you have downloaded a script, copy or move it to your scripts directory. It can be found in the Preferences: **Folders** → **Scripts**.
2. Do a refresh by using **Exts** → **Script-Fu** → **Refresh Scripts** from the toolbox. The script will now appear in one of your menus. If you don’t find it, look for it under the root file menu filters. If it doesn’t appear at all, something was wrong with the script (e.g. it contains syntax errors).

4.8. Do’s and Don’ts

A common error when you are dealing with Script-Fus is that you simply bring them up and press the OK button. When nothing happens, you probably think that the script is broken or buggy, but there is most likely nothing wrong with it.

Think again. Did you really read the information in the dialog, or did you just press the button? If you forgot an input the script needs, or if you gave it the wrong input, the script will fail. One of the most common errors is that the font specified in the script dialog hasn’t been installed on your system. So please check the information in the dialog before blaming the script.

4.9. Different Kinds Of Script-Fus

There are two kinds of Script-Fus – standalone scripts and image-dependent scripts. You will find the standalone variants under **Xtns** → **Script-Fu** → **Type of Script** in the main toolbox menu, and the image-dependent scripts are placed under **Script-Fu** → **Type of Script** in the image menu.

4.10. Standalone Scripts

We will not try to describe every script in depth. Most Script-Fus are very easy to understand and use. At the time of this writing, the following types are installed by default:

- Patterns
- Web page themes
- Logos
- Buttons
- Utils
- Make Brush
- Misc.

Patterns You will find all kinds of pattern-generating scripts here. Generally, they are quite useful because you can add many arguments to your own patterns.

We'll take a look at the Land script. In this script you have to set the image/pattern size, and specify what levels of random to use for your land creation. The colors used to generate the land map are taken from the currently selected gradient in the gradient editor. You must also supply values for the level of detail, land and sea height/depth and the scale. Scale refers to the scale of your map, just as in an ordinary road map, 1:10 will be typed as 10.

Web Page Themes Here is clearly a practical use for scripts. By creating a script for making custom text, logos, buttons arrows, etc., for your web site, you will give them all the same style and shape. You will also be saving a lot of time, because you don't have to create every logo, text or button by hand.

You will find the Gimp.org theme under the Web page theme submenu. If you want to create your own theme, this script will serve as an excellent template that you can modify to create a theme for your web site.

Most of the scripts are quite self-explanatory, but here are some hints:

- Leave all strange characters like ' and " intact.
- Make sure that the pattern specified in the script exists.
- Padding refers to the amount of space around your text.
- A high value for bevel width gives the illusion of a higher button.
- If you type TRUE for "Press", the button will look pushed down.
- Choose transparency if you don't want a solid background. If you choose a solid background, make sure it is the same color as the web page background.

Logos Here you will find all kinds of logo-generating scripts. This is nice, but use it with care, as people might recognize your logo as being made by a known Gimp script. You should rather regard it as a base that you can modify to fit your needs. The dialog for making a logo is more or less the same for all such scripts:

1. In the Text String field, type your logo name, like Frozenriver.
2. In the Font Size text field, type the size of your logo in pixels.
3. In the Font text field, type the name of the font that you want to use for your logo.
4. To choose the color of your logo, just click on the color button. This brings up a color dialog.
5. If you look at the current command field, you can watch the script run.

Make Buttons Under this headline you'll find a script that makes beveled buttons. The script has a dozen parameters or so, and most of them are similar to those in the logo scripts. You can experiment with different settings to come up with a button you like.

Utils Under Utils you will find a small but nice script: the Fontmap script, which makes an image of your fonts. You will have to type the names of the fonts you want displayed in the Fonts text field. The Custom gradient script creates an image of the current custom gradient in the gradient editor. This can be useful if you want to pick colors from a gradient as in a palette.

Misc. Under Misc. you'll find scripts that can be quite useful, but aren't suitable for the other submenus. An example is the Sphere script. You will have to set the radius in pixels to determine the sphere size. The lighting angle is where at the sphere you point the spotlight. This value also has an impact on the sphere shadow. If you don't want a shadow, you will have to type FALSE. The last thing you have to select is background color, and the color of your sphere.

Make Brush This script lets you make your own custom rectangular/circular brushes, with or without feathered (blurred) edges. The script will automatically store your brush in your personal brush directory. You just have to press refresh in the Brush Selection dialog to use your newly created brush.

4.11. Image-Dependent Scripts

These are scripts that perform operations on an existing image. In many ways they are like the plug-ins in the Filters menu. The following script groups are installed by default:

- Decor
- Modify
- Animators
- Stencil Ops
- Alchemy
- Shadow
- Render
- Utils
- Selection

Stencil Ops Here, you'll find two scripts: Carve-It and Chrome-It, which can render some truly nice artistic effects on grayscale images.

Drop Shadow Drop Shadow will cast a shadow behind your selected object. It has three important parameters. X and Y offset determine where the shadow will be placed in relation to the selected object. Offset is measured in pixels. High values make the shadow look like it's far away, and low values will make it look closer to the object. The blur value is also important, because a shadow that is cast far from the object has a higher blur level.

Perspective Shadow Perspective Shadow has a very important parameter: the perspective angle. If this angle is set to 0 or 180, there will be no shadow, because the script assumes that the object has no thickness. This also means that this script looks fine in certain angles, but unnatural in others. The other parameters are quite self-explanatory. You'll get more blur if the horizon is far away, and the shadow length is the length in relation to the selected object.

5. Using GIMP as a Beginner

5.1. Files

The GIMP is capable of reading and writing a large variety of graphics file formats. With the exception of GIMP's native XCF file type, file handling is done by plug-ins. Thus, it is relatively easy to extend GIMP to new file types when the need arises.

Not all file types are equally good for all purposes. This part of the documentation should help you understand the advantages and disadvantages of each type.

5.1.1. Creating new Files

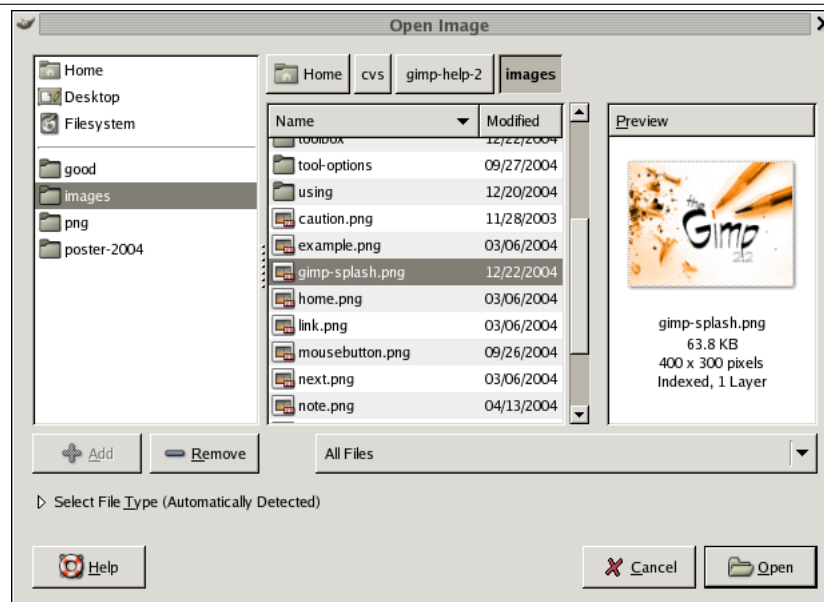
You can create new files in GIMP by using the following menuitem: **File** → **New**. This opens the **Create a new image** dialog, where you can modify the initial width and height of the file or using the standard values. More information about this dialog can be found in [Section 10.5.2 on page 269](#).

5.1.2. Opening Files

There are several ways of opening an existing image in GIMP:

- **Open File.** The most obvious is to open it using a menu, by choosing **File** → **Open** from either the Toolbox menu or an image menu. This brings up a File Chooser dialog, allowing you to navigate to the file and click on its name. This method works well if you know the name of the file you want to open, and where it is located. It is not so convenient if you want to find the file on the basis of a thumbnail.

Figure 5.1. The “File Open” dialog.



GIMP 2.2 introduced a new File Chooser that provides several features to help you navigate quickly to the file you are looking for. Perhaps the most important is the ability to create “bookmarks” for folders that you use often. Your list of bookmarks appears on the left side of the dialog. The ones at the top (“Home”, “Desktop”, etc) come automatically; the others you create using the “Add” button at the bottom of the list. Double-clicking on a bookmark takes you straight to that directory.

At the center of the dialog appears a listing of the contents of the selected directory. Subdirectories are shown at the top of the list, files below them. By default all files in the directory are listed, but you can restrict the listing to image files of a specific type using the File Type selection menu that appears beneath the directory listing.

When you click on a file entry in the listing, if it is an image file, a preview will appear on the right side of the dialog, along with some basic information about the properties of the image. Note that previews are cached when they are generated, and there are some things you can do that may cause a preview to be incorrect. If you suspect that this may be happening, you can force a new preview to be generated by holding down the Ctrl key and clicking in the Preview area.

One thing that strikes many people when they first see the File Open dialog is that there is no way to enter the name of the file using the keyboard. Actually this can be done, but the feature is a bit hidden: if you type **Ctrl-L** with the dialog focused, an “Open Location” dialog pops up, with a space to type the file name. This dialog is described in more detail below.

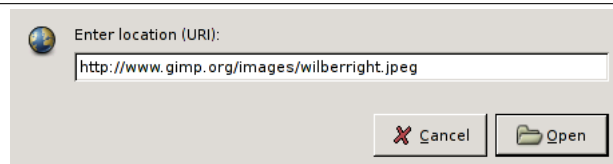
NOTE



In the great majority of cases, if you select a file name from the list, and click the “Open” button in the lower right corner of the dialog, GIMP will automatically determine the file type for you. On rare occasions, mainly if the file type is unusual and the name lacks a meaningful extension, this may fail. If this happens, you can tell GIMP specifically what type of file it is by expanding the “Select File Type” option at the bottom of the dialog, and choosing an entry from the list that appears. More commonly, though, if GIMP fails to open an image file, it is either corrupt or not in a supported format.

- **Open Location.** If instead of a file name, you have a URI (i.e., a web address) for the image, you can open it using the menu, by choosing **File** → **Open Location** from either the Toolbox menu or an image menu. This brings up a small dialog that allows you to enter (or paste) the URI.

Figure 5.2. The “Open Location” dialog.. The “Open Location” dialog.



- **Open Recent.** If the image is one that you previously created using GIMP, perhaps the easiest way to open it is from the menu, using **File** → **Open Recent**. This gives you a scrollable list of the images you have most recently worked on in, with icons beside them. You need only select the one you want, and it will be opened.
- **File Browser.** If you have associated the file type of the image with GIMP, either when you installed GIMP or later, then you can navigate to the file using a file manager (such as Nautilus in Linux, or Windows Explorer in Windows), and once you have found it, double-click on the icon. If things are set up properly, this will cause the image to open in GIMP.
- **Drag and Drop.** Alternatively, once you have found the file, you can click on its icon and drag it into the GIMP Toolbox. (If instead you drag it into an existing GIMP image, it will be added to that image as a new layer or set of layers.)

For many applications, you can click on a displayed image (a full image, not just a thumbnail) and drag it into the GIMP toolbox.

- **Copy and Paste.** For some applications, if the application gives you a way of copying the image to the clipboard, you can then open the image in GIMP by choosing **File** → **Acquire** → **Paste as**

New from the Toolbox menu. Support for this is somewhat variable, however, so your best bet is to try it and see whether it works.

- **Image Browser.** In Linux, you might want to take a look at a program called gthumb, an image-management application that in several ways nicely complements GIMP. In gthumb, you can cause an image to open in GIMP either by right-clicking on the icon and selecting GIMP from among the list of options, or by dragging the icon into the GIMP Toolbox. See the gthumb home page <<http://gthumb.sourceforge.net>> for more information. Other similar applications : gqview <<http://gqview.sourceforge.net>>, xnview <<http://perso.wanadoo.fr/pierre.g/xnview/enhome.html>>

When you open a file, using the File menu or any other method, GIMP needs to determine what type of file it is. Unless there is no alternative, GIMP does not simply rely on the extension (such as ".jpg") to determine the file type, because extensions are not reliable: they vary from system to system; any file can be renamed to have any extension; and there are many reasons why a file name might lack an extension. Instead, GIMP first tries to recognize a file by examining its contents: most of the commonly used graphics file formats have "magic headers" that permit them to be recognized. Only if the magic yields no result does GIMP resort to using the extension.

5.1.3. Saving Files

There are several commands for saving images. A list, and information on how to use them, can be found in the section covering the **File menu**.

GIMP allows you to save the images you create in a wide variety of formats. It is important to realize that the only format capable of saving *all* of the information in an image, including layers, transparency, etc., is GIMP's native XCF format. Every other format preserves some image properties and loses others. When you save an image, GIMP tries to let you know about this, but basically it is up to you to understand the capabilities of the format you choose.

Figure 5.3. Example of an Export dialog



As stated above, there is no file format, with the exception of GIMP's native **XCF** format, that is capable of storing all the data in a GIMP image. When you ask to save an image in a format that will not completely represent it, GIMP notifies you of this, tells you what kind of information will be lost, and asks you whether you would like to "export" the image in a form that the file type can handle. Exporting an image does not modify the image itself, so you do not lose anything by doing this.

NOTE



When you close an image (possibly by quitting GIMP), you are warned if the image is "dirty"; that is, if it has been changed without subsequently being saved. Saving an image in any file format will cause the image to be considered "not dirty", even if the file format does not represent all of the information from the image.

5.2. Drawing Simple Objects

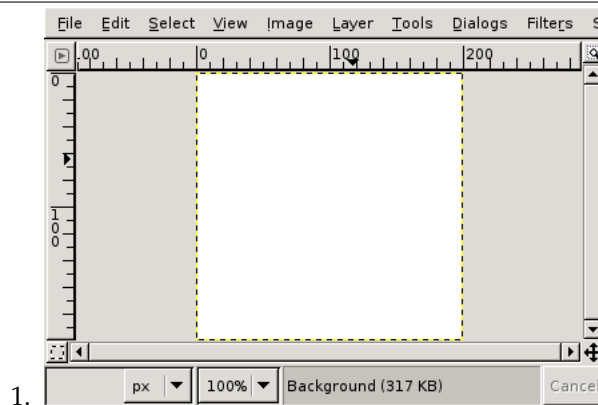
This section will give you an introduction about the creation of simple objects in Gimp. It's pretty simple once you figured out how to do it. GIMP provides a huge set of **Tools** and Shortcuts in which most new users are lost.

5.2.1. Drawing a straight line

Lets begin by painting a straight line. The easiest way to create a straight line is by using your favorite **painting tool**, the mouse and the keyboard.

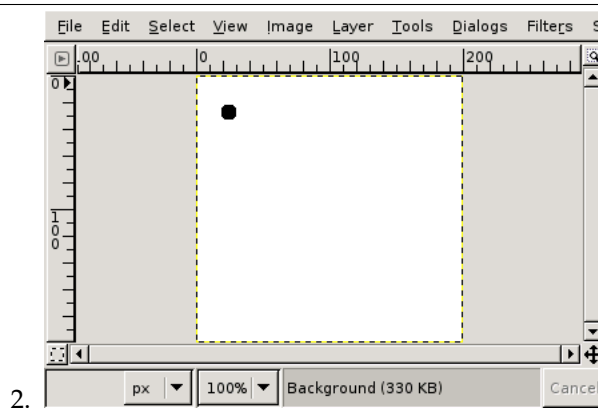
Drawing a straight line

Figure 5.4. The dialog shows a new image, filled with a white background.



Create a **new image**. Select your favorite **paint tool** or use the **pencil** if in doubt. Select a **foreground color**, but be sure, that foreground and background color are different.

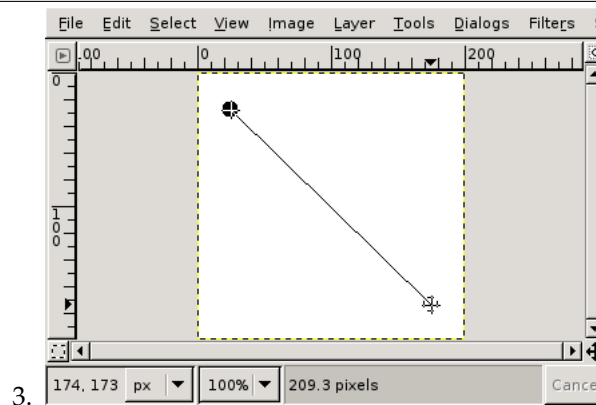
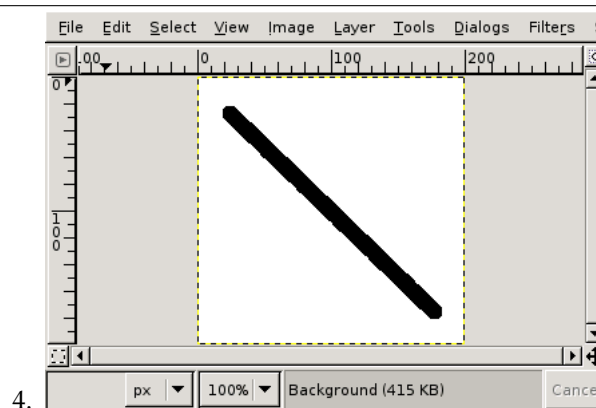
Figure 5.5. The dialog shows a new image, with the first dot indicating the start of the straight line. The dot has a black foreground color.



Create a start point by clicking on the **image display** area with the left mouse button. Your canvas should look similar to **Figure 5.4**.

Now, hold down the **Shift** button on your keyboard and move the mouse away from the created start point. You'll see a thin line indicating how the line will look like.

If you're satisfied with the line direction and length, click again the left mouse button to finish the line. The GIMP shows a straight line now. Please check the foreground and background color and if the **Shift** key was still pressed during painting in case no line appears. You can continuously creating lines by still holding the **Shift** and create additional end points.

Figure 5.6. The screenshot shows the helpline, which indicates how the finished line will look like.**Figure 5.7.** The created line appears in the image window after drawing the second point (or end point), while still having the **Shift** key pressed.

5.2.2. Creating a Basic Shape

1. Drawing shapes is not the main purpose for what the GIMP is used. Shapes are created either by painting them using the technique described in [Figure 5.4 on the preceding page](#) or by using the selection tools. Of course, there are various other ways to paint a shape, but we'll stick to the easiest ones here. So, create a **new image** and check that **foreground and background colors** are different.

Basic shapes like a rectangular, triangle or ellipse can be created using the **selection tools**. The tutorial uses a rectangular selection as an example. So, choose the **rectangular selection tool** and create a new selection: hold the left mouse button pressed while moving the mouse to other positions in the image (illustrated in [figure Figure 5.8 on the following page](#)). The selection is created if you leave the mouse button pressed. For more information about key modifiers look at the **selection tools**.

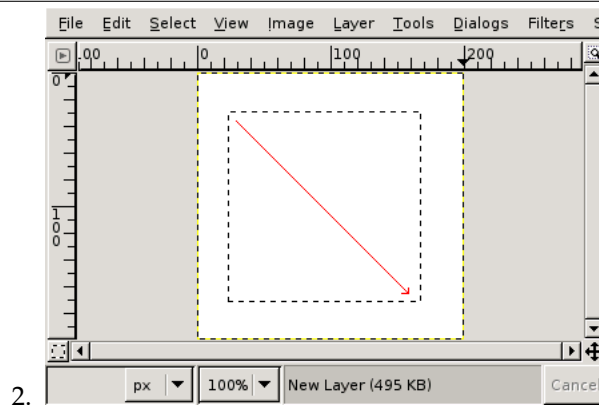
After creating the selection, you can either create a filled or an outlined shape with the foreground color of your choice. If you go for the first option, choose a **foreground color** and fill the selection with the **bucket fill tool**. If you choose the latter option, create an outline by using the **Stroke selection** menu item from the **Edit** menu. If you're satisfied with the result, **remove the selection**.

5.3. Create and use Selections

5.3.1. Moving selection

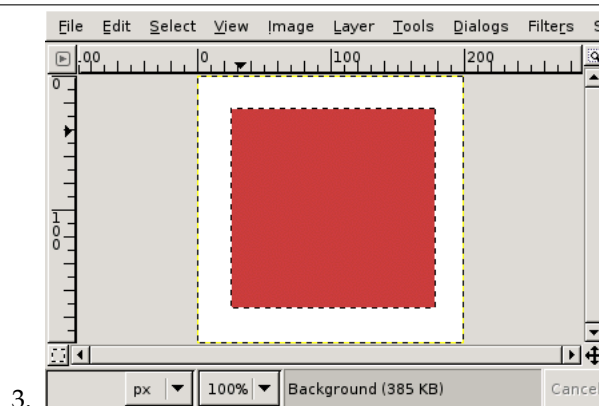
After creating a rectangular, elliptic or free selection, or with the Magic wand, the default mouse pointer is the moving cross. Then, Click-and-drag allows you to move the selection and its content, while the initial position remains empty.

Figure 5.8. The screenshot shows how a rectangular selection is created. Move the mouse in the direction of the red arrow by holding the left mouse button pressed.



2.

Figure 5.9. The screenshot shows how a rectangular selection fill with the foreground color.



3.

If you want to move only the selection border not moving its content, then press down the **Alt** key and clic-and-drag the selection.

NOTE



Sometimes the **Alt** key is used by the window manager and you move the image window instead of the selection. If this is the case, you have two choices: you can either press the **Alt** key together with the **Shift** key or select the move tool and change the “Affect” option.

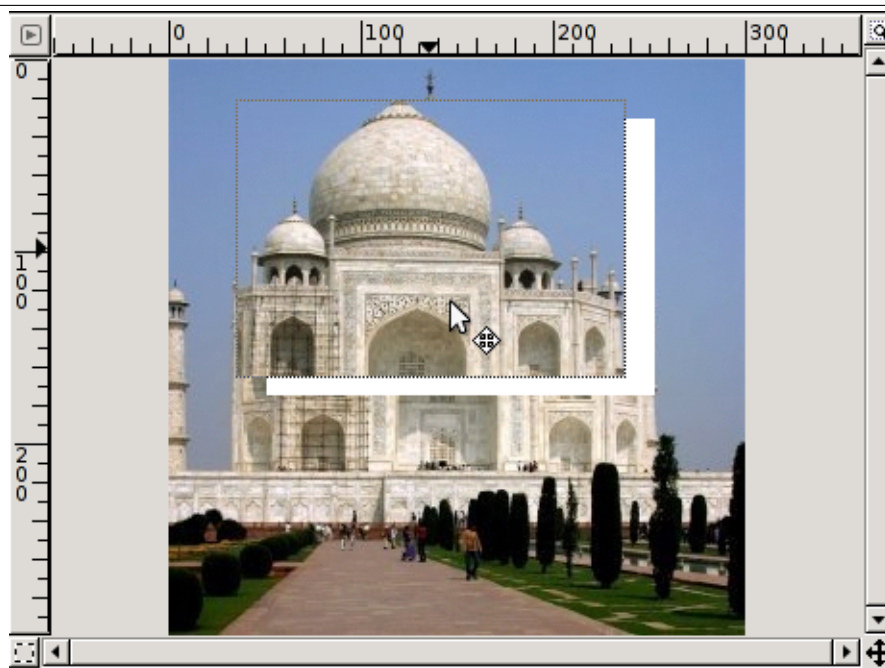
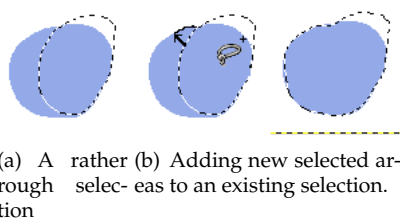
For moving a selection without emptying its initial position you just have to press both the **Ctrl** and **Alt** keys, then click-and-drag the selection or either using the Move tool in Selection mode.

Moving a selection automatically creates a floating layer (floating selection). See [Floating selection](#). Then the mouse pointer represents an anchor when it is outside of the selection. This means that the selection will be definitely fixed at the chosen place when clicking.

As soon as this floating selection is created in the Layer dialog (and you can create it with Selection/Float), you can use the keyboard arrow keys to move the selection horizontally or vertically.

5.3.2. Creating a free selection

When using lasso to select an object, some parts of the object and its proximity may be selected either way. You can correct these defects by pressing **Shift** or **Ctrl** keys while using lasso. Here is an example: While pressing **Shift**, draw the new border with the lasso, close the selection including a part of the first selection. As soon as you release the mouse button, both selections are added. You could so subtract

Figure 5.10. Moving the selection reveals the background layer**Figure 5.11.** Using the free selection tool

the exceeding selection by pressing **Ctrl**.

NOTE



To correct selection defects precisely, use the **Quick Mask**.

5.4. Dialogs and Docking

5.4.1. Creating Dialogs

Most dockable dialogs can be created in more than one way, but all of them can be created using the **File** → **Dialogs** menu from the Main Toolbox, or by using the **Add** command in the Tab menu from any dialog. As a convenience, there are also three pre-built docks you can create using the **File** → **Dialogs** → **Create New Dock** menu path from the Main Toolbox:

Layers, Channels and Paths This gives you a dock containing:

- The Channels dialog

- The Layers dialog
- The Paths dialog
- The Undo dialog

Brushes, Patterns and Gradients This gives you a dock containing:

- The Brushes dialog
- The Patterns dialog
- The Gradients dialog
- The Palettes dialog
- The Fonts dialog

Misc. Stuff This gives you a dock containing:

- The Buffers dialog
- The Images dialog
- The Document History dialog
- The Image Templates dialog

TIP

Just because you have a lot of flexibility does not mean that all choices are equally good. There are at least two things we recommend:



1. Keep the Tool Options dialog docked directly beneath the Main Toolbox at all times.
2. Keep the Layers dialog around at all times, in a separate dock from the Main Toolbox, with an Image Menu above it. (Use “Show Image Menu” in the dialog Tab menu to display the Image menu if you have somehow lost it.)

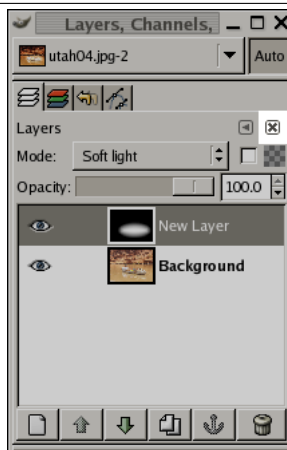
5.4.2. Removing Tabs

If you want to remove a dialog from a dock, there are two ways you can do it. First, if you click on the drag handle area and drag the dialog away, releasing it someplace other than a docking bar, it will form a new dock in its own right. Second, clicking on the “Close Tab” button (highlighted in the figure to the right) will close the frontmost dialog.

5.5. How to Set Your Tile Cache

A low value means that Gimp sends data very quickly to disk, not making real use of the available RAM, and making the disks work without any real reason. Too high a value, and other applications start to have less system resources, forcing them to use swap space, which also makes the disks work; or maybe some will even get killed or start to malfunction due lack of RAM.

How to choose a number for the Tile Cache size? Here are some ways you could decide what value to use, as well as a few tricks:

Figure 5.12. A dialog in a dock, with the “Close Tab” button highlighted

- The easiest method is to just forget about this and hope the default works. This was a usable method when computers had little RAM, and most people just tried to make small images with Gimp while running one or two other applications at the same time. If you want something easy and only use Gimp to make screenshots and logos, this is probably the best solution.
- If you have a modern computer with plenty of memory—say, 512 MB or more—setting the Tile Cache to half of your RAM will probably give good performance for Gimp in most situations without depriving other applications. Probably even 3/4 of your RAM would be fine.
- Ask someone to do it for you, which in the case of a computer serving multiple users at the same time can be a good idea: that way the administrator and other users do not get mad at you for abusing the machine, nor do you get a badly underperforming Gimp. If it is your machine and only serves a single user at a given time, this could mean money, or drinks, as price for the service.
- Start changing the value a bit each time and check that it goes faster and faster with each increase, but the system does not complain about lack of memory. Be forewarned that sometimes lack of memory shows up suddenly with some applications being killed to make space for the others.
- Do some simple math and calculate a viable value. Maybe you will have to tune it later, but maybe you have to tune it anyway with the other previous methods. At least you know what is happening and can get the best from your computer.

Let's suppose you prefer the last option, and want to get a good value to start with. First, you need to get some data about your computer. This data is the amount of RAM installed in your system, the operating system's swap space available, and a general idea about the speed of the disks that store the operating system's swap and the directory used for Gimp's swap. You do not need to do disk tests, nor check the RPM of the disks, the thing is to see which one seems clearly faster or slower, or whether all are similar. You can change Gimp's swap directory in the Folders page of the Preferences dialog.

The next thing to do is to see how much resources you require for other apps you want to run at the same time than Gimp. So start all your tools and do some work with them, except Gimp of course, and check the usage. You can use applications like *free* or *top*, depending in what OS and what environment you use. The numbers you want is the memory left, including file cache. Modern Unix keeps a very small area free, in order to be able to keep large file and buffer caches. Linux's *free* command does the maths for you: check the column that says “free”, and the line “-/+ buffers/cache”. Note down also the free swap

Now time for decisions and a bit of simple math. Basically the concept is to decide if you want to base all Tile Cache in RAM, or RAM plus operating system swap:

1. Do you change applications a lot? Or keep working in Gimp for a long time? If you spend a lot of time in Gimp, you can consider free RAM plus free swap as available; if not, you need to go to the following steps. (If you're feeling unsure about it, check the following steps.) If you are sure you switch apps every few minutes, only count the free RAM and just go to the final decision; no more things to check.

2. Does the operating system swap live in the same physical disk as Gimp swap? If so, add RAM and swap. Otherwise go to the next step.
3. Is the disk that holds the OS swap faster or the same speed as the disk that holds the Gimp swap? If slower, take only the free RAM; if faster or similar, add free RAM and swap.
4. You now have a number, be it just the free RAM or the free RAM plus the free OS swap. Reduce it a bit, to be on the safe side, and that is the Tile Cache you could use as a good start.

As you can see, all is about checking the free resources, and decide if the OS swap is worth using or will cause more problems than help.

There are some reasons you want to adjust this value, though. The basic one is changes in your computer usage pattern, or changing hardware. That could mean your assumptions about how you use your computer, or the speed of it, are no longer valid. That would require a reevaluation of the previous steps, which can drive you to a similar value or a completely new value.

Another reason to change the value is because it seems that Gimp runs too slowly, while changing to other applications is fast: this means that Gimp could use more memory without impairing the other applications. On the other hand, if you get complaints from other applications about not having enough memory, then it may benefit you to not let Gimp hog so much of it.

If you decided to use only RAM and Gimp runs slowly, you could try increasing the value a bit, but never to use also all the free swap. If the case is the contrary, using both RAM and swap, and you have problems about lack of resources, then you should decrease the amount of RAM available to Gimp.

Another tricks is to put the Swap Dir in a very fast disk, or in a different disk than the one where most of your files reside. Spreading the operating system swap over multiple disks is also a good way to speed up things, in general. And of course, maybe you have to buy more RAM or stop using lots of programs at the same time: you can not expect to edit a poster in a computer with 16MB and be fast.

You can also check what memory requirements your images have. The larger the images, and the number of undos, the more resources you need. This is another way to choose a number, but it is only good if you always work with the same kind of images, and thus the real requirements do not vary. It is also helpful to know if you will require more RAM and/or disk space.

6. Using GIMP as an Intermediate

6.1. Using the Quickmask

1. Open an image or begin a new document;
2. Activate the Quickmask using the left-bottom button in the image window. If a selection is present the mask is initialized with the content of the selection;
3. Choose any drawing tool. Paint on the Quick Mask using black color to remove selected areas and white color to add selected areas. You can use grey colors to get partially selected areas. You can also use selection tools and fill these selections with the Bucket Fill tool. This does not destroy the Qmask selections!
4. Toggle off the Quickmask using the left-bottom button in the image window: the selection will be displayed with its marching ants.

6.2. Creating New Layers

There are several ways to create new layers in an image. Here are the most important ones:

- Selecting **Layer** → **New Layer** in the image menu. This brings up a dialog that allows you to set the basic properties of the new layer; see the [New Layer dialog](#) section for help with it.
- Selecting **Layer** → **Duplicate Layer** in the image menu. This creates a new layer, that is a perfect copy of the currently active layer, just above the active layer.
- When you “cut” or “copy” something, and then paste it using Ctrl-V or **Edit** → **Paste**, the result is a “floating selection”, which is a sort of temporary layer. Before you can do anything else, you either have to anchor the floating selection to an existing layer, or convert it into a normal layer. If you do the latter, the new layer will be sized just large enough to contain the pasted material.

6.3. Paths

6.3.1. Stroking a Path

Figure 6.1. The four paths from the top illustration, each stroked in a different way.

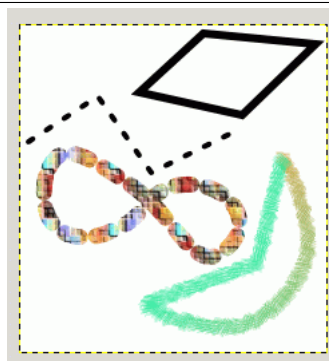
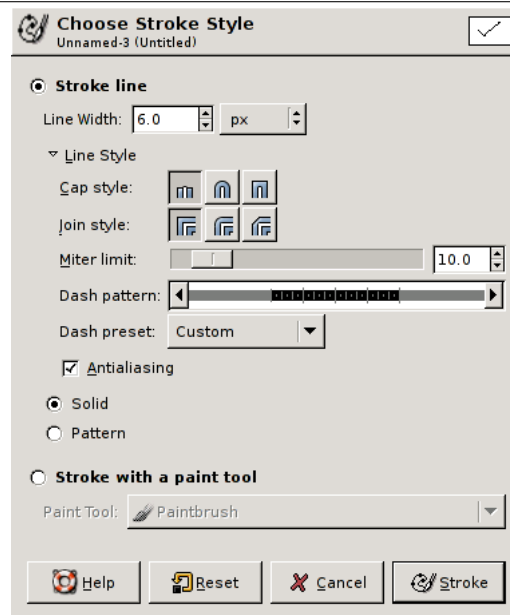


Figure 6.2. The **Stroke Path** dialog.

Paths do not alter the appearance of the image pixel data unless they are *stroked*, using **Edit** → **Stroke Path** from the image menu or the Paths dialog right-click menu, or the “Stroke Path” button in the Tool Options dialog for the Path tool.

Choosing “Stroke Path” by any of these means brings up a dialog that allows you to control the way the stroking is done. You can choose from a wide variety of line styles, or you can stroke with any of the Paint tools, including unusual ones such as the Clone tool, Smudge tool, Eraser, etc.

You can further increase the range of stroking effects by stroking a path multiple times, or by using lines or brushes of different widths. The possibilities for getting interesting effects in this way are almost unlimited.

6.3.2. Transforming Paths

Each of the Transform tools (Rotate, Scale, Perspective, etc) can be set to act specifically on paths, using the “Affect:” option in the tool’s Tool Options dialog. This gives you a powerful set of methods for altering the shapes of paths without affecting other elements of the image.

By default a Transform tool, when it is set to affect paths, only acts on a single path: the *active path* for the image, which is shown highlighted in the Paths dialog. You can make a transformation affect more than one path, and possibly other things as well, using the “transform lock” buttons in the Paths dialog. Not only paths, but also layers and channels, can be transform-locked. If you transform one element that is transform-locked, all others will be transformed in the same way. So, for example, if you want to scale a layer and a path by the same amount, click the transform-lock buttons so that “chain” symbols appear next to the layer in the Layers dialog, and the path in the Paths dialog; then use the Scale tool on either the layer or the path, and the other will automatically follow.

6.4. Working with Digital Camera Photos

6.4.1. Introduction

One of the most common uses of the Gimp is to fix digital camera images that for some reason are less than perfect. Maybe the image is overexposed or underexposed; maybe rotated a bit; maybe out of focus: these are all common problems for which Gimp has good tools. The purpose of this chapter is to give you an overview of those tools and the situations in which they are useful. You will not find detailed tutorials here: in most cases it is easier to learn how to use the tools by experimenting with them than by reading about them. (Also, each tool is described more thoroughly in the Help section devoted to it.) You will also not find anything in this chapter about the multitude of “special effects”

that you can apply to an image using Gimp. You should be familiar with basic Gimp concepts before reading this chapter, but you certainly don't need to be an expert—if you are, you probably know most of this anyway. And don't hesitate to experiment: Gimp's powerful "undo" system allows you to recover from almost any mistake with a simple Ctrl-Z.

Most commonly the things that you want to do to clean up an imperfect photo are of four types: improving the composition; improving the colors; improving the sharpness; and removing artifacts or other undesirable elements of the image.

6.4.2. Improving Composition

6.4.2.1. Rotating an Image

It is easy, when taking a picture, to hold the camera not quite perfectly vertical, resulting in a picture where things are tilted at an angle. In Gimp, the way to fix this is to use the **Rotate** tool. Activate this by clicking its icon in the Toolbox, or by pressing the "R" key capitalized) while inside the image. Make sure the Tool Options are visible, and at the top, make sure for "Affect:" that the left button ("Transform Layer") is selected. If you then click the mouse inside the image and drag it, you will see a grid appear that rotates as you drag. When the grid looks right, click **rotate** or press the enter key, and the image will be rotated.

Now as a matter of fact, it isn't so easy to get things right by this method: you often find that things are better but not quite perfect. One solution is to rotate a bit more, but there is a disadvantage to that approach. Each time you rotate an image, because the rotated pixels don't line up precisely with the original pixels, the image inevitably gets blurred a little bit. For a single rotation, the amount of blurring is quite small, but two rotations cause twice as much blurring as one, and there is no reason to blur things more than you have to. A better alternative is to undo the rotation and then do another, adjusting the angle.

Fortunately, Gimp provides another way of doing it that is considerably easier to use: in the Rotate Tool Options, for the Transform Direction you can select "Backward (Corrective)". When you do this, instead of rotating the grid to compensate for the error, you can rotate it to *line up* with the error. If this seems confusing, try it and you will see that it is quite straightforward.

NOTE



Note: New in Gimp 2.2 is the option to preview the results of transformations, instead of just seeing a grid. This makes it easier to get things right on the first try.

After you have rotated an image, there will be unpleasant triangular "holes" at the corners. One way to fix them is to create a background that fills the holes with some unobtrusive or neutral color, but usually a better solution is to crop the image. The greater the rotation, the more cropping is required, so it is best to get the camera aligned as well as possible when you take the picture in the first place.

6.4.2.2. Cropping

When you take a picture with a digital camera, you have some control over what gets included in the image but often not as much as you would like: the result is images that could benefit from trimming. Beyond this, it is often possible to enhance the impact of an image by trimming it so that the most important elements are placed at key points. A rule of thumb, not always to be followed but good to keep in mind, is the "rule of thirds", which says that maximum impact is obtained by placing the center of interest one-third of the way across the image, both widthwise and heightwise.

To crop an image, activate the **Crop** tool in the Toolbox, or by pressing the "C" key (capitalized) while inside the image. With the tool active, clicking and dragging in the image will sweep out a crop rectangle. It will also pop up a dialog that allows you to adjust the dimensions of the crop region if they aren't quite right. When everything is perfect, hit the **Crop** button in the dialog.

6.4.3. Improving Colors

6.4.3.1. Automated Tools

In spite of sophisticated exposure-control systems, pictures taken with digital cameras often come out over- or under-exposed, or with color casts due to imperfections in lighting. Gimp gives you a variety of tools to correct colors in an image, ranging to automated tools that run with a simple button-click to highly sophisticated tools that give you many parameters of control. We will start with the simplest first.

Gimp gives you five automated color correction tools. Unfortunately they don't usually give you quite the results you are looking for, but they only take a moment to try out, and if nothing else they often give you an idea of some of the possibilities inherent in the image. Except for "Auto Levels", you can find them in the Layer menu, by following the menu path **Layer** → **Colors** → **Auto** in the image menu.

Here they are, with a few words about each:

Normalize This tool (it is really a plug-in) is useful for underexposed images: it adjusts the whole image uniformly until the brightest point is right at the saturation limit, and the darkest point is black. The downside is that the amount of brightening is determined entirely by the lightest and darkest points in the image, so even one single white pixel and/or one single black pixel will make normalization ineffective.

Equalize This is a very powerful adjustment that tries to spread the colors in the image evenly across the range of possible intensities. In some cases the effect is amazing, bringing out contrasts that are very difficult to get in any other way; but more commonly, it just makes the image look weird. Oh well, it only takes a moment to try.

Color Enhance Help me, what exactly does this do? Obviously it makes some things more saturated.

Stretch Contrast This is like "Normalize", except that it operates on the red, green, and blue channels independently. It often has the useful effect of reducing color casts.

Auto Levels This is done by activating the Levels tool (**Tools** → **Color Tools** → **Levels** in the image menu), clicking on the image to bring up the tool dialog, and then pressing the **Auto** button near the center of the dialog. You will see a preview of the result; you must press **Okay** for it to take effect. Pressing **Cancel** instead will cause your image to revert to its previous state.

If you can find a point in the image that ought to be perfect white, and a second point that ought to be perfect black, then you can use the Levels tool to do a semi-automatic adjustment that will often do a good job of fixing both brightness and colors throughout the image. First, bring up the Levels tool as previously described. Now, look down near the bottom of the Layers dialog for three buttons with symbols on them that look like eye-droppers (at least, that is what they are supposed to look like). The one on the left, if you mouse over it, shows its function to be "Pick Black Point". Click on this, then click on a point in the image that ought to be black—really truly perfectly black, not just sort of dark—and watch the image change. Next, click on the rightmost of the three buttons ("Pick White Point"), and then click a point in the image that ought to be white, and once more watch the image change. If you are happy with the result, click the **Okay** button otherwise **Cancel**.

Those are the automated color adjustments: if you find that none of them quite does the job for you, it is time to try one of the interactive color tools. All of these, except one, can be accessed via Tools->Color Tools in the image menu. After you select a color tool, click on the image (anywhere) to activate it and bring up its dialog.

6.4.3.2. Exposure Problems

The simplest tool to use is the **Brightness/Contrast** tool. It is also the least powerful, but in many cases it does everything you need. This tool is often useful for images that are overexposed or underexposed; it is not useful for correcting color casts. The tool gives you two sliders to adjust, for “Brightness” and “Contrast”. If you have the option “Preview” checked (and almost certainly you should), you will see any adjustments you make reflected in the image. When you are happy with the results, press **Okay** and they will take effect. If you can’t get results that you are happy with, press **Cancel** and the image will revert to its previous state.

A more sophisticated, and only slightly more difficult, way of correcting exposure problems is to use the **Levels** tool. The dialog for this tool looks very complicated, but for the basic usage we have in mind here, the only part you need to deal with is the “Input Levels” area, specifically the three triangular sliders that appear below the histogram. We refer you to the **Levels Tool Help** for instructions; but actually the easiest way to learn how to use it is to experiment by moving the three sliders around, and watching how the image is affected. (Make sure that “Preview” is checked at the bottom of the dialog.)

A very powerful way of correcting exposure problems is to use the **Curves** tool. This tool allows you to click and drag control points on a curve, in order to create a function mapping input brightness levels to output brightness levels. The Curves tool can replicate any effect you can achieve with Brightness/Contrast or the Levels tool, so it is more powerful than either of them. Once again, we refer you to the **Curves Tool Help** for detailed instructions, but the easiest way to learn how to use it is by experimenting.

The most powerful approach to adjusting brightness and contrast across an image, for more expert Gimp users, is to create a new layer above the one you are working on, and then in the Layers dialog set the Mode for the upper layer to “Multiply”. The new layer then serves as a “gain control” layer for the layer below it, with white yielding maximum gain and black yielding a gain of zero. Thus, by painting on the new layer, you can selectively adjust the gain for each area of the image, giving you very fine control. You should try to paint only with smooth gradients, because sudden changes in gain will give rise to spurious edges in the result. Paint only using shades of gray, not colors, unless you want to produce color shifts in the image.

Actually, “Multiply” is not the only mode that is useful for gain control. In fact, “Multiply” mode can only darken parts of an image, never lighten them, so it is only useful where some parts of an image are overexposed. Using “Divide” mode has the opposite effect: it can brighten areas of an image but not darken them. Here is a trick that is often useful for bringing out the maximum amount of detail across all areas of an image:

1. Duplicate the layer (producing a new layer above it).
2. Desaturate the new layer.
3. Apply a Gaussian blur to the result, with a large radius (100 or more).
4. Set Mode in the Layers dialog to Divide.
5. Control the amount of correction by adjusting opacity in the Layers dialog, or by using Brightness/Contrast, Levels, or Curves tools on the new layer.
6. When you are happy with the result, you can use **Merge Down** to combine the control layer and the original layer into a single layer.

In addition to “Multiply” and “Divide”, you may every so often get useful effects with other layer combination modes, such as “Dodge”, “Burn”, or “Soft Light”. It is all too easy, though, once you start playing with these things, to look away from the computer for a moment and suddenly find that you have just spent an hour twiddling parameters. Be warned: the more options you have, the harder it is to make a decision.

6.4.3.3. Adjusting Hue and Saturation

In our experience, if your image has a color cast—too much red, too much blue, etc—the easiest way to correct it is to use the Levels tool, adjusting levels individually on the red, green, and blue channels. If this doesn’t work for you, it might be worth your while to try the Color Balance tool or the Curves tool,

but these are much more difficult to use effectively. (They are very good for creating certain types of special effects, though.)

Sometimes it is hard to tell whether you have adjusted colors adequately. A good, objective technique is to find a point in the image that you know should be either white or a shade of gray. Activate the **Color Picker** tool (the eyedropper symbol in the Toolbox), and click on the aforesaid point: this brings up the Color Picker dialog. If the colors are correctly adjusted, then the red, green, and blue components of the reported color should all be equal; if not, then you should see what sort of adjustment you need to make. This technique, when well used, allows even color-blind people to color-correct an image.

If your image is washed out—which can easily happen when you take pictures in bright light—try the **Hue/Saturation** tool, which gives you three sliders to manipulate, for Hue, Lightness, and Saturation. Raising the saturation will probably make the image look better. In some cases it is useful to adjust the lightness at the same time. (“Lightness” here is similar to “Brightness” in the Brightness/Contrast tool, except that they are formed from different combinations of the red, green, and blue channels.) The Hue/Saturation tool gives you the option of adjusting restricted subranges of colors (using the buttons at the top of the dialog), but if you want to get natural-looking colors, in most cases you should avoid doing this.

TIP



Even if an image does not seem washed out, often you can increase its impact by pushing up the saturation a bit. Veterans of the film era sometimes call this trick “Fujifying”, after Fujichrome film, which is notorious for producing highly saturated prints.

When you take pictures in low light conditions, in some cases you have the opposite problem: too much saturation. In this case too the Hue/Saturation tool is a good one to use, only by reducing the saturation instead of increasing it.

6.4.4. Adjusting Sharpness

6.4.4.1. Unblurring

If the focus on the camera is not set perfectly, or the camera is moving when the picture is taken, the result is a blurred image. If there is a lot of blurring, you probably won’t be able to do much about it with any technique, but if there is only a moderate amount, you should be able to improve the image.

The most generally useful technique for sharpening a fuzzy image is called the **Unsharp Mask**. In spite of the rather confusing name, which derives from its origins as a technique used by film developers, its result is to make the image sharper, not “unsharp”. It is a plug-in, and you can access it as Filters->Enhance->Unsharp Mask in the image menu. There are two parameters, “Radius” and “Amount”. The default values often work pretty well, so you should try them first. Increasing either the radius or the amount increases the strength of the effect. Don’t get carried away, though: if you make the unsharp mask too strong, it will amplify noise in the image and also give rise to visible artifacts where there are sharp edges.

TIP



Sometimes using Unsharp Mask can cause color distortion where there are strong contrasts in an image. When this happens, you can often get better results by decomposing the image into separate Hue-Saturation-Value (HSV) layers, and running Unsharp Mask on the Value layer only, then recomposing. This works because the human eye has much finer resolution for brightness than for color. See the sections on **Decompose** and **Compose** for more information.

Next to “Unsharp Mask” in the Filters menu is another filter called **Sharpen**, which does similar

things. It is a little easier to use but not nearly as effective: our recommendation is that you ignore it and go straight to Unsharp Mask.

In some situations, you may be able to get useful results by selectively sharpening specific parts of an image using the **Blur or Sharpen** tool from the Toolbox, in "Sharpen" mode. This allows you to increase the sharpness in areas by painting over them with any paintbrush. You should be restrained about this, though, or the results will not look very natural: sharpening increases the apparent sharpness of edges in the image, but also amplifies noise.

6.4.4.2. Reducing Graininess

When you take pictures in low-light conditions or with a very fast exposure time, the camera does not get enough data to make good estimates of the true color at each pixel, and consequently the resulting image looks grainy. You can "smooth out" the graininess by blurring the image, but then you will also lose sharpness. There are a couple of approaches that may give better results. Probably the best, if the graininess is not too bad, is to use the filter called **Selective Blur**, setting the blurring radius to 1 or 2 pixels. The other approach is to use the **Despeckle** filter. This has a nice preview, so you can play with the settings and try to find some that give good results. When graininess is really bad, though, it is often very difficult to fix by anything except heroic measures (i.e., retouching with paint tools).

6.4.4.3. Softening

Every so often you have the opposite problem: an image is *too* crisp. The solution is to blur it a bit: fortunately blurring an image is much easier than sharpening it. Since you probably don't want to blur it very much, the simplest method is to use the "Blur" plug-in, accessed via Filters->Blur->Blur from the image menu. This will soften the focus of the image a little bit. If you want more softening, just repeat until you get the result you desire.

6.4.5. Removing Unwanted Objects from an Image

There are two kinds of objects you might want to remove from an image: first, artifacts caused by junk such as dust or hair on the lens; second, things that were really present but impair the quality of the image, such as a telephone wire running across the edge of a beautiful mountain landscape.

6.4.5.1. Despeckling

A good tool for removing dust and other types of lens grunge is the **Despeckle** filter, accessed as Filters->Enhance->Despeckle from the image menu. Very important: to use this filter effectively, you must begin by making a small selection containing the artifact and a small area around it. The selection must be small enough so that the artifact pixels are statistically distinguishable from the other pixels inside the selection. If you try to run despeckle on the whole image, you will hardly ever get anything useful. Once you have created a reasonable selection, activate Despeckle, and watch the preview as you adjust the parameters. If you are lucky, you will be able to find a setting that removes the junk while minimally affecting the area around it. The more the junk stands out from the area around it, the better your results are likely to be. If it isn't working for you, it might be worthwhile to cancel the filter, create a different selection, and then try again.

If you have more than one artifact in the image, it is necessary to use Despeckle on each individually.

6.4.5.2. Garbage Removal

The most useful method for removing unwanted "clutter" from an image is the **Clone** tool, which allows you to paint over one part of an image using pixel data taken from another part (or even from a different image). The trick to using the clone tool effectively is to be able to find a different part of the image that can be used to "copy over" the unwanted part: if the area surrounding the unwanted object is very different from the rest of the image, you won't have much luck. For example, if you have a lovely beach scene, with a nasty human walking across the beach who you would like to teleport away, you will probably be able to find an empty part of the beach that looks similar to the part he is walking across, and use it to clone over him. It is quite astonishing how natural the results can look when this technique works well.

Consult the **Clone Tool Help** for more detailed instructions. Cloning is as much an art as a science, and the more you practice at it, the better you will get. At first it may seem impossible to produce anything except ugly blotches, but persistence will pay off.

In some cases you may be able to get good results by simply cutting out the offending object from the image, and then using a plug-in called “Resynthesizer” to fill in the void. This plug-in is not included with the main Gimp distribution, but it can be obtained from the author’s Resynthesizer <<http://www.logarithmic.net/pfh/resynthesizer>> web site. As with many things, your mileage may vary.

6.4.5.3. Removing Red-eye

When you take a flash picture of somebody who is looking directly toward the camera, the iris of the eye can bounce the light of the flash back toward the camera in such a way as to make the eye appear bright red: this effect is called “red eye”, and looks very bizarre. Many modern cameras have special flash modes that minimize red-eye, but they only work if you use them, and even then they don’t always work perfectly. Interestingly, the same effect occurs with animals, but the eyes may show up as other colors, such as green.

Gimp does not include a special tool for removing red-eye, but it isn’t all that hard to do. Basically the idea is to zoom the area around the eye so that it is nice and large and easy to work with; then make a selection of the red part of the eye and a bit of the area around it; feather the selection so that you don’t create sharp-looking edges; and finally desaturate the red channel inside the selection using one of the color tools—Levels, Curves, or Hue/Saturation. It takes a little practice the first few times, but once you have the technique mastered, you should be able to quickly and easily create quite a natural looking eye color.

If you would like a more automated approach, you can try downloading a recently created redeye <<http://registry.gimp.org/plugin?id=4212>> plug-in from the Gimp Plug-in Registry. We have not received any feedback so far about how well it works. It comes in source code form, so you will need to be able to compile it in order to use it. (See **Installing New Plug-ins** for information on how to do this.)

6.4.6. Saving Your Results

6.4.6.1. Files

What file format should you use to save the results of your work, and should you resize it? The answers depend on what you intend to use the image for.

- If you intend to open the image in Gimp again for further work, you should save it in Gimp’s native XCF format (i. e., name it something.xcf), because this is the only format that guarantees that none of the information in the image is lost.
- If you intend to print the image on paper, you should avoid shrinking the image, except by cropping it. The reason is that printers are capable of achieving much higher dot resolutions than video monitors—600 to 1400 dots per inch for typical printers, as compared to 72 to 100 dots per inch for monitors. A 3000 x 5000 image looks huge on a monitor, but it only comes to about 5 inches by 8 inches on paper at 600 dpi. There is usually no good reason to *expand* the image either: you can’t increase the true resolution that way, and it can always be scaled up at the time it is printed. As for the file format, it will usually be fine to use JPEG at a quality level of 75 to 85. In rare cases, where there are large swaths of nearly uniform color, you may need to set the quality level even higher or use a lossless format such as TIFF instead.
- If you intend to display the image on screen or project it with a video projector, bear in mind that the highest screen resolution for most commonly available systems is 1600 x 1200, so there is nothing to gain by keeping the image larger than that. For this purpose, the JPEG format is almost always a good choice.
- If you want to put the image on a web page or send it by email, it is a good idea to make every effort to keep the file size as small as possible. First, scale the image down to the smallest size that makes it possible to see the relevant details (bear in mind that other people may be using different sized monitors and/or different monitor resolution settings). Second, save the image as a JPEG

file. In the JPEG save dialog, check the option to “Preview in image window”, and then adjust the Quality slider to the lowest level that gives you acceptable image quality. (You will see in the image the effects of each change.) Make sure that the image is zoomed at 1:1 while you do this, so you are not misled by the effects of zooming.

See the **File Formats** section for more information.

Více se dozvíte v části Souborové formáty.

6.4.6.2. Printing Your Photos

[This needs to be written.]

6.4.6.3. EXIF Data

Modern digital cameras, when you take a picture, add information to the data file about the camera settings and the circumstances under which the picture was taken. This data is included in JPEG or TIFF files in a structured format called EXIF. For JPEG files, Gimp is capable of maintaining EXIF data, if it is built appropriately: it depends on a library called “libexif”, which may not be available on all systems. If Gimp is built with EXIF support enabled, then loading a JPEG file with EXIF data, and resaving the resulting image in JPEG format, will cause the EXIF data to be preserved unchanged. This is not, strictly speaking, the right way for an image editor to handle EXIF data, but it is better than simply removing it, which is what earlier versions of Gimp did.

If you would like to see the contents of the EXIF data, you can download from the registry an Exif Browser plug-in <<http://registry.gimp.org/plugin?id=4153>>. If you are able to build and install it on your system, you can access it as Filters->Generic->Exif Browser from the image menu. (See **Installing New Plug-ins** for help.)

6.5. Preparing your Images for the web

One of the most common purposes GIMP is used for, is to prepare images for adding them to a web site. This means, images should look as nice as possible while keeping the file size as small as possible. This little step-by-step guide will tell you how to achieve a smaller file size with minimal degradation of image quality.

6.5.1. Images with an optimal Size/Quality Ratio

An optimal image for the web depends on the image type and the fileformat you’ve to use. If you want to put a photograph with a lot of colors online, you have to use **JPEG** as your primary fileformat. If it contains less colors, is not a photograph and more a drawing you created (like a button or a screenshot) you better stay with the **PNG** format. We’ll guide you through the last described process.

1. First open the image as usual. I opened our Wilber as an example image.

Figure 6.3. The Wilber image opened in the RGBA mode.



2. The image is now in RGB mode with an additional **alpha channel** (RGBA). There is mostly no need to have an alpha channel for your web image. You can remove the Alpha channel by **flattening the Image**. If you open a photograph, you probably don’t have to remove an alpha channel, because it is already opened in RGB mode.
3. After flattening, you are able to **save the image** in **PNG Format** for your homepage.

NOTE



You can save the PNG with the default settings, but with a maximal compression. Saving your image in PNG doesn't have any quality drawbacks in comparison to eg. **JPEG**. If you opened a photograph with lots of colors, you better save this file as a jpeg. The problem is, to get the best tradeoff between quality and compression. More information about this topic can be found in **JPEG**.

6.5.2. Squeezing Filesize a bit more

If you want to squeeze your image a bit more, you could convert your image to Indexed mode. Converting images with smooth color transitions or gradients to indexed mode will often give poor results, because it will turn the smooth gradients into a series of bands. This method is also not recommended for photographs. It'll make the image look bad and grainy.

Figure 6.4. The indexed image can look a bit grainy. The left image is the wilber in original size, the right one zoomed in by 300 percent.



1. Use the **Convert Mode Dialog** to convert your RGB image to indexed mode.
2. After converting to indexed, you are once again able to **save** your image in **PNG Format**.

6.5.3. Saving images with transparency

There are two approaches of graphic file formats, which support transparent areas on your image: simple binary transparency and alpha transparency. The first mentioned, binary transparency is supported by the **GIF** format. It can mark one color of the indexed color palette as the transparent color. Alpha transparency is supported by the **PNG** format, which holds his transparency information in a separate channel: the **Alpha channel**.

NOTE



There is mostly no need anymore, to save images in the GIF format, because PNG supports all the features of GIF and offers additional features (eg. alpha transparency). Nevertheless, this format is stil used for animations.

Creating an image with transparent areas (alpha transparency)

1. First of all, we're using the same image as in the tutorials before: Wilber the GIMP mascot.

Figure 6.5. The Wilber image opened in the RGBA mode.



2. A requirement for saving an image with alpha transparency is an alpha channel. To check if the image has an alpha channel, go to the **channel dialog** and verify, that besides Red, Green and Blue an entry with "Alpha" exist. If this is not the case, **add a new alpha channel** from the layers menu.
3. You're now able to remove the background layer to get a transparent background, or create a gradient from color to transparency. What you want to do depends on your fantasy. To demonstrate the abilities of alpha transparency, we'll make a soft glow in the background around our wilber.
4. After you're done with your image, you can **save** your image in a **PNG Format**.

Figure 6.6. Mid-Tone Checks in the background layer represent the transparent region of the saved image during editing in Gimp.

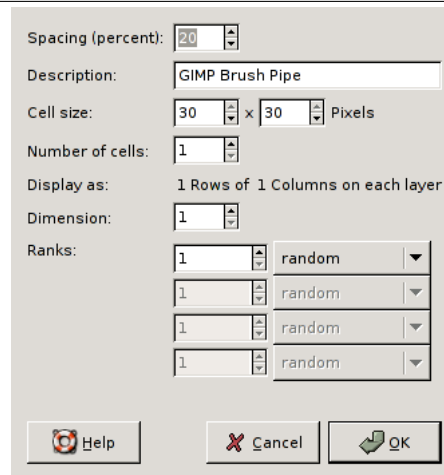


6.6. Adding New Brushes

To add a new brush, after either creating or downloading it, you need to save it in a format GIMP can use. The brush file needs to be placed in the GIMP's brush search path, so that GIMP is able to index and display it in the Brushes dialog. You can hit the **Refresh** button, which reindexes the brush directory. GIMP uses three file formats for brushes:

GBR The `.gbr` ("gimp brush") format is used for ordinary and color brushes. You can convert many other types of images, including many brushes used by other programs, into GIMP brushes by opening them in GIMP and saving them with file names ending in `.gbr`. This brings up a dialog box in which you can set the default Spacing for the brush. A more complete description of the GBR file format can be found in the file `gbr.txt` in the `devel-docs` directory of the GIMP source distribution.

GIH The `.gih` ("gimp image hose") format is used for animated brushes. These brushes are constructed from images containing multiple layers: each layer may contain multiple brush-shapes, arranged in a grid. When you save an image as a `.gih` file, a dialog comes up that allows you to describe the format of the brush. Look at **The GIH dialog box** for more information about the dialog. The GIH format is rather complicated: a complete description can be found in the file `gih.txt` in the `devel-docs` directory of the GIMP source distribution.

Figure 6.7. The dialog to describe the animated brush.

VBR The `.vbr` format is used for parametric brushes, i. e., brushes created using the Brush Editor. There is really no other meaningful way of obtaining files in this format.

To make a brush available, place it in one of the folders in GIMP's brush search path. By default, the brush search path includes two folders, the system `brushes` folder, which you should not use or alter, and the `brushes` folder inside your personal GIMP directory. You can add new folders to the brush search path using the [Brush Folders](#) page of the Preferences dialog. Any GBR, GIH, or VBR file included in a folder in the brush search path will show up in the Brushes dialog the next time you start GIMP, or as soon as you press the **Refresh** button in the Brushes dialog.

NOTE



When you create a new parametric brush using the Brush Editor, it is automatically saved in your personal `brushes` folder.

There are a number of web sites with downloadable collections of GIMP brushes. Rather than supplying a list of links that will soon be out of date, the best advice is to do a search with your favorite search engine for "Gimp brushes". There are also many collections of brushes for other programs with painting functionality. Some can be converted easily into GIMP brushes, some require special conversion utilities, and some cannot be converted at all. Most fancy procedural brush types fall into the last category. If you need to know, look around on the web, and if you don't find anything, look for an expert to ask.

7. Using GIMP as an Expert

7.1. Text

7.1.1. Embellishing Text

Figure 7.1. Fancy text. Four fancy text items created using logo scripts: “alien neon”, “bovination”, “frosty”, and “chalk”. Default settings were used for everything except font size.



There are many things you can do to vary the appearance of text beyond just rendering it with different fonts or different colors. By converting a text item to a selection or a path, you can fill it, stroke the outlines, transform it, or generally apply the whole panoply of GIMP tools to get interesting effects. As a demonstration of some of the possibilities, try out the “logo” scripts in the Toolbox menu, at **Xtns** → **Script-Fu** → **Logos**. Each of these scripts allows you to enter some text, and then creates a new image showing a logo constructed out of that text. If you would like to modify one of these scripts, or construct a logo script of your own, the [Using Script-Fu](#) and [Script-Fu Tutorial](#) sections should help you get started. Of course, you don’t need Script-Fu to create these sorts of effects, only to automate them.

7.1.2. Adding Fonts

For the most authoritative and up-to-date information on fonts in GIMP, consult the Fonts in GIMP 2.0 <<http://gimp.org/unix/fonts.html>> page at the GIMP web site. This section attempts to give you a helpful overview.

GIMP uses the FreeType 2 font engine to render fonts, and a system called Fontconfig to manage them. GIMP will let you use any font in Fontconfig’s font path; it will also let you use any font it finds in GIMP’s font search path, which is set on the **Font Folders** page of the Preferences dialog. By default, the font search path includes a system GIMP-fonts folder (which you should not alter, even though it is actually empty), and a `fonts` folder inside your personal GIMP directory. You can add new folders to the font search path if it is more convenient for you.

FreeType 2 is a very powerful and flexible system. By default, it supports the following font file formats:

- TrueType fonts (and collections)
- Type 1 fonts
- CID-keyed Type 1 fonts
- CFF fonts
- OpenType fonts (both TrueType and CFF variants)

- SFNT-based bitmap fonts
- X11 PCF fonts
- Windows FNT fonts
- BDF fonts (including anti-aliased ones)
- PFR fonts
- Type42 fonts (limited support)

You can also add modules to support other types of font files. See FREETYPE 2 <<http://www.freetype.org/freetype2/index.html#features>> for more information.

Linux. On a Linux system, if the Fontconfig utility is set up as usual, all you need to do to add a new font is to place the file in the directory `~/.fonts`. This will make the font available not only to GIMP, but to any other program that uses Fontconfig. If for some reason you want the font to be available to GIMP only, you can place it in the `fonts` subdirectory of your personal GIMP directory, or some other location in your font search path. Doing either will cause the font to show up the next time you start GIMP. If you want to use it in an already running GIMP, press the *Refresh* button in the **Fonts dialog**.

Windows. The easiest way to install a font is to drag the file onto the Fonts directory and let the shell do its magic. Unless you've done something creative, it's probably in its default location of `C:\windows\fonts` or `C:\winnt\fonts`. Sometimes double-clicking on a font will install it as well as display it; sometimes it only displays it. This method will make the font available not only to GIMP, but also to other Windows applications.

To install a Type 1 file, you need both the `.pfb` and `.pfm` files. Drag the one that gets an icon into the `fonts` folder. The other one doesn't strictly need to be in the same directory when you drag the file, since it uses some kind of search algorithm to find it if it's not, but in any case putting it in the same directory does no harm.

In principle, GIMP can use any type of font on Windows that FreeType can handle; however, for fonts that Windows can't handle natively, you should install them by placing the font files in the `fonts` folder of your personal GIMP directory, or some other location in your font search path. The support Windows has varies by version. All that GIMP runs on support at least TrueType, Windows FON, and Windows FNT. Windows 2000 and later support Type 1 and OpenType. Windows ME supports OpenType and possibly Type 1 (but the most widely used Windows GIMP installer does not officially support Windows ME, although it may work anyway).

NOTE



GIMP uses Fontconfig to manage fonts on Windows as well as Linux. The instructions above work because Fontconfig by default uses the Windows fonts directory, i. e., the same fonts that Windows uses itself. If for some reason your Fontconfig is set up differently, you will have to figure out where to put fonts so that GIMP can find them: in any case, the `fonts` folder of your personal GIMP directory should work.

7.1.3. Font Problems

Problems with fonts have probably been responsible for more GIMP 2 bug reports than any other single cause, although they have become much less frequent in the most recent releases in the 2.0 series. In most cases they have been caused by malformed font files giving trouble to Fontconfig. If you experience crashes at startup when GIMP scans your font directories, the best solution is to upgrade to a version of Fontconfig newer than 2.2.0. As a quick workaround you can start gimp with the `--no-fonts` command-line option, but then you will not be able to use the text tool.

Another known problem is that Pango 1.2 cannot load fonts that don't provide an Unicode character mapping. (Pango is the text layout library used by GIMP.) A lot of symbol fonts fall into this category.

On some systems, using such a font can cause GIMP to crash. Updating to Pango 1.4 will fix this problem and makes symbol fonts available in GIMP.

A frequent source of confusion occurs on Windows systems, when GIMP encounters a malformed font file and generates an error message: this causes a console window to pop up so that you can see the message. *Do not close that console window. It is harmless, and closing it will shut down GIMP.* When this happens, it often seems to users that GIMP has crashed. It hasn't: closing the console window causes Windows to shut GIMP down. Unfortunately, this annoying situation is caused by an interaction between Windows and the libraries that GIMP links to: it cannot be fixed within GIMP. All you need to do, though, if this happens, is minimize the console window and ignore it.

7.2. Rendering a Grid

What if you want to create a grid that is actually part of the image? You can't do this using the image grid: it is only an aid, and only visible on the monitor or in a screenshot. You can, however, use the **Grid** plugin to render a grid very similar to the image grid (actually the plugin has substantially more options).

See also **Grid and Guides**.

7.3. A Script-Fu Tutorial

In this training course, we'll introduce you to the fundamentals of Scheme necessary to use Script-Fu, and then build a handy script that you can add to your toolbox of scripts. The script prompts the user for some text, then creates a new image sized perfectly to the text. We will then enhance the script to allow for a buffer of space around the text. We will conclude with a few suggestions for ways to ramp up your knowledge of Script-Fu.

NOTE



This section as adapted from a tutorial written for the Gimp 1 User Manual by Mike Terry.

7.3.1. Getting Acquainted With Scheme

7.3.1.1. Let's Start Scheme'ing

The first thing to learn is that:

Every statement in Scheme is surrounded by parentheses ().

The second thing you need to know is that:

The function name/operator is always the first item in the parentheses, and the rest of the items are parameters to the function.

However, not everything enclosed in parentheses is a function – they can also be items in a list – but we'll get to that later. This notation is referred to as prefix notation, because the function prefixes everything else. If you're familiar with postfix notation, or own a calculator that uses Reverse Polish Notation (such as most HP calculators), you should have no problem adapting to formulating expressions in Scheme.

The third thing to understand is that:

Mathematical operators are also considered functions, and thus are listed first when writing mathematical expressions.

This follows logically from the prefix notation that we just mentioned.

7.3.1.2. Examples Of Prefix, Infix, And Postfix Notations

Here are some quick examples illustrating the differences between *prefix*, *infix*, and *postfix* notations. We'll add a 1 and 3 together:

- Prefix notation: + 1 3 (the way Scheme will want it)
- Infix notation: 1 + 3 (the way we “normally” write it)
- Postfix notation: 1 3 + (the way many HP calculators will want it)

7.3.1.3. Practicing In Scheme

Now, let’s practice what we have just learned. Start up Gimp, if you have not already done so, and choose **Xtns** → **Script-Fu** → **Console**. This will start up the Script-Fu Console window, which allows us to work interactively in Scheme. In a matter of moments, the Script-Fu Console will appear:

7.3.1.4. The Script-Fu Console Window

At the bottom of this window is an entry-field entitled **Current Command**. Here, we can test out simple Scheme commands interactively. Let’s start out easy, and add some numbers:

```
(+ 3 5)
```

Typing this in and hitting **Enter** yields the expected answer of 8 in the center window.

Now, what if we wanted to add more than one number? The “+” function can take two or more arguments, so this is not a problem:

```
(+ 3 5 6)
```

This also yields the expected answer of 14.

So far, so good – we type in a Scheme statement and it’s executed immediately in the Script-Fu Console window. Now for a word of caution....

7.3.1.5. Watch Out For Extra Parens

If you’re like me, you’re used to being able to use extra parentheses whenever you want to – like when you’re typing a complex mathematical equation and you want to separate the parts by parentheses to make it clearer when you read it. In Scheme, you have to be careful and not insert these extra parentheses incorrectly. For example, say we wanted to add 3 to the result of adding 5 and 6 together:

```
3 + (5 + 6) + 7 = ?
```

Knowing that the + operator can take a list of numbers to add, you might be tempted to convert the above to the following:

```
(+ 3 (5 6) 7)
```

However, this is incorrect – remember, every statement in Scheme starts and ends with parens, so the Scheme interpreter will think that you’re trying to call a function named “5” in the second group of parens, rather than summing those numbers before adding them to 3.

The correct way to write the above statement would be:

```
(+ 3 (+ 5 6) 7)
```

7.3.1.6. Make Sure You Have The Proper Spacing, Too

If you are familiar with other programming languages, like C/C++, Perl or Java, you know that you don't need white space around mathematical operators to properly form an expression:

```
{\verb 3+5, 3 +5, 3+ 5}
```

These are all accepted by C/C++, Perl and Java compilers. However, the same is not true for Scheme. You must have a space after a mathematical operator (or any other function name or operator) in Scheme for it to be correctly interpreted by the Scheme interpreter.

Practice a bit with simple mathematical equations in the Script-Fu Console until you're totally comfortable with these initial concepts.

7.3.2. Variables And Functions

Now that we know that every Scheme statement is enclosed in parentheses, and that the function name/operator is listed first, we need to know how to create and use variables, and how to create and use functions. We'll start with the variables.

7.3.2.1. Declaring Variables

Although there are a couple of different methods for declaring variables, the preferred method is to use the `let*` construct. If you're familiar with other programming languages, this construct is equivalent to defining a list of local variables and a scope in which they're active. As an example, to declare two variables, `a` and `b`, initialized to 1 and 2, respectively, you'd write:

```
(let* (
      (a 1)
      (b 2)
    )
  (+ a b)
)
```

or, as one line:

```
(let* ( (a 1) (b 2) ) (+ a b) )
```

NOTE



You'll have to put all of this on one line if you're using the console window. In general, however, you'll want to adopt a similar practice of indentation to help make your scripts more readable. We'll talk a bit more about this in the section on White Space.

This declares two local variables, `a` and `b`, initializes them, then prints the sum of the two variables.

7.3.2.2. What Is A Local Variable?

You'll notice that we wrote the summation `[code] (+ a b) [/code]` within the parens of the `[code] let* [/code]` expression, not after it.

This is because the `let*` statement defines an area in your script in which the declared variables are usable; if you type the `(+ a b)` statement after the `(let* ...)` statement, you'll get an error, because the declared variables are only valid within the context of the `let*` statement; they are what programmers call local variables.

7.3.2.3. The General Syntax Of `let*`

The general form of a `let*` statement is:

```
(let* ( variables ) expressions )
```

where variables are declared within parens, e.g., `(a 2)`, and expressions are any valid Scheme expressions. Remember that the variables declared here are only valid within the `let*` statement – they're local variables.

7.3.2.4. White Space

Previously, we mentioned the fact that you'll probably want to use indentation to help clarify and organize your scripts. This is a good policy to adopt, and is not a problem in Scheme – white space is ignored by the Scheme interpreter, and can thus be liberally applied to help clarify and organize the code within a script. However, if you're working in Script-Fu's Console window, you'll have to enter an entire expression on one line; that is, everything between the opening and closing parens of an expression must come on one line in the Script-Fu Console window.

7.3.2.5. Assigning A New Value To A Variable

Once you've initialized a variable, you might need to change its value later on in the script. Use the `set!` statement to change the variable's value:

```
(let* ( (theNum 10) ) (set! theNum (+ theNum \
theNum)) )
```

Try to guess what the above statement will do, then go ahead and enter it in the Script-Fu Console window.

NOTE



The `\` indicates that there is no line break. Ignore it (don't type it in your Script-Fu console and don't hit Enter), just continue with the next line.

7.3.2.6. Functions

Now that you've got the hang of variables, let's get to work with some functions. You declare a function with the following syntax:

```
(define (name param-list) expressions)
```

where *name* is the name assigned to this function, *param-list* is a space-delimited list of parameter names, and *expressions* is a series of expressions that the function executes when it's called. For example:


```
(define (AddXY inX inY) (+ inX inY) )
```

AddXY is the function's name and inX and inY are the variables. This function takes its two parameters and adds them together.

If you've programmed in other imperative languages (like C/C++, Java, Pascal, etc.), you might notice that a couple of things are absent in this function definition when compared to other programming languages.

- First, notice that the parameters don't have any "types" (that is, we didn't declare them as strings, or integers, etc.). Scheme is a type-less language. This is handy and allows for quicker script writing.
- Second, notice that we don't need to worry about how to "return" the result of our function – the last statement is the value "returned" when calling this function. Type the function into the console, then try something like:

```
(AddXY (AddXY 5 6) 4)
```

7.3.3. Lists, Lists And More Lists

We've trained you in variables and functions, and now enter the murky swamps of Scheme's lists.

7.3.3.1. Defining A List

Before we talk more about lists, it is necessary that you know the difference between atomic values and lists.

You've already seen atomic values when we initialized variables in the previous lesson. An atomic value is a single value. So, for example, we can assign the variable "x" the single value of 8 in the following statement:

```
(let* ( (x 8) ) x)
```

(We added the expression x at the end to print out the value assigned to x – normally you won't need to do this. Notice how [code] let* [/code] operates just like a function: The value of the last statement is the value returned.)

A variable may also refer to a list of values, rather than a single value. To assign the variable x the list of values 1, 3, 5, we'd type:

```
(let* ( (x '(1 3 5)) ) x)
```

Try typing both statements into the Script-Fu Console and notice how it replies. When you type the first statement in, it simply replies with the result:

```
8
```

However, when you type in the other statement, it replies with the following result:

```
(1 3 5)
```

When it replies with the value 8 it is informing you that `x` contains the atomic value 8. However, when it replies with `(1 3 5)`, it is then informing you that `x` contains not a single value, but a list of values. Notice that there are no commas in our declaration or assignment of the list, nor in the printed result.

The syntax to define a list is:

```
' (a b c)
```

where `a`, `b`, and `c` are literals. We use the apostrophe (`'`) to indicate that what follows in the parentheses is a list of literal values, rather than a function or expression.

An empty list can be defined as such:

```
' ()
```

or simply:

```
()
```

Lists can contain atomic values, as well as other lists:

```
(let*
  (
    (x
      ' ("The Gimp" (1 2 3) ("is" ("great" () ) ) )
    )
  )
  x
)
```

Notice that after the first apostrophe, you no longer need to use an apostrophe when defining the inner lists. Go ahead and copy the statement into the Script-Fu Console and see what it returns.

You should notice that the result returned is not a list of single, atomic values; rather, it is a list of a literal `[code] ("The Gimp") [/code]`, the list `[code] (1 2 3) [/code]`, etc.

7.3.3.2. How To Think Of Lists

It's useful to think of lists as composed of a "head" and a "tail." The head is the first element of the list, the tail the rest of the list. You'll see why this is important when we discuss how to add to lists and how to access elements in the list.

7.3.3.3. Creating Lists Through Concatenation (The Cons Function)

One of the more common functions you'll encounter is the `cons` function. It takes a value and prepends it to its second argument, a list. From the previous section, I suggested that you think of a list as being composed of an element (the head) and the remainder of the list (the tail). This is exactly how `cons` functions – it adds an element to the head of a list. Thus, you could create a list as follows:

```
(cons 1 ' (2 3 4) )
```

The result is the list `(1 2 3 4)` .
 You could also create a list with one element:

```
(cons 1 () )
```

You can use previously declared variables in place of any literals, as you would expect.

7.3.3.4. Defining A List Using The list Function

To define a list composed of literals or previously declared variables, use the list function:

```
(list 5 4 3 a b c)
```

This will compose and return a list containing the values held by the variables `a`, `b` and `c`. For example:

```
(let* (
      (a 1)
      (b 2)
      (c 3)
    )
  (list 5 4 3 a b c)
)
```

This code creates the list `(5 4 3 1 2 3)` .

7.3.3.5. Accessing Values In A List

To access the values in a list, use the functions `car` and `cdr` , which return the first element of the list and the rest of the list, respectively. These functions break the list down into the head::tail construct I mentioned earlier.

7.3.3.6. The `car` Function

`car` returns the first element of the list (the head of the list). The list needs to be non-null. Thus, the following returns the first element of the list:

```
(car '("first" 2 "third"))
```

which is:

```
"first"
```

7.3.3.7. The `cdr` function

`cdr` returns the rest of the list after the first element (the tail of the list). If there is only one element in the list, it returns an empty list.

```
(cdr '("first" 2 "third"))
```

returns:

```
(2 "third")
```

whereas the following:

```
(cdr '("one and only"))
```

returns:

```
()
```

7.3.3.8. Accessing Other Elements In A List

OK, great, we can get the first element in a list, as well as the rest of the list, but how do we access the second, third or other elements of a list? There exist several “convenience” functions to access, for example, the head of the head of the tail of a list (`caadr`), the tail of the tail of a list (`cddr`), etc.

The basic naming convention is easy: The a’s and d’s represent the heads and tails of lists, so

```
(car (cdr (car x) ) )
```

could be written as:

```
(cadar x)
```

To view a full list of the list functions, refer to the Appendix, which lists the available functions for the version of Scheme used by Script-Fu.

To get some practice with list-accessing functions, try typing in the following (except all on one line if you’re using the console); use different variations of `car` and `cdr` to access the different elements of the list:

```
(let* (
  (x ' ( (1 2 (3 4 5) 6) 7 8 (9 10) )
)
  ; place your car/cdr code here
)
```

Try accessing the number 3 in the list using only two function calls. If you can do that, you’re on your way to becoming a Script-Fu Master!

NOTE



In Scheme, a semicolon (“;”) marks a comment. It, and anything that follows it on the same line, are ignored by the script interpreter, so you can use this to add comments to jog your memory when you look at the script later.

7.3.4. Your First Script-Fu Script

Do you not need to stop and catch your breath? No? Well then, let's proceed with your fourth lesson – your first Script-Fu Script.

7.3.4.1. Creating A Text Box Script

One of the most common operations I perform in Gimp is creating a box with some text in it for a web page, a logo or whatever. However, you never quite know how big to make the initial image when you start out. You don't know how much space the text will fill with the font and font size you want.

The Script-Fu Master (and student) will quickly realize that this problem can easily be solved and automated with Script-Fu.

We will, therefore, create a script, called Text Box, which creates an image correctly sized to fit snugly around a line of text the user inputs. We'll also let the user choose the font, font size and text color.

7.3.4.2. Editing And Storing Your Scripts

Up until now, we've been working in the Script-Fu Console. Now, however, we're going to switch to editing script text files.

Where you place your scripts is a matter of preference – if you have access to Gimp's default script directory, you can place your scripts there. However, I prefer keeping my personal scripts in my own script directory, to keep them separate from the factory-installed scripts.

In the `.gimp-2.2` directory that Gimp made off of your home directory, you should find a directory called `scripts`. Gimp will automatically look in your `.gimp-2.2` directory for a `scripts` directory, and add the scripts in this directory to the Script-Fu database. You should place your personal scripts here.

7.3.4.3. The Bare Essentials

Every Script-Fu script defines at least one function, which is the script's main function. This is where you do the work.

Every script must also register with the procedural database, so you can access it within Gimp.

We'll define the main function first:

```
(define (script-fu-text-box inText inFont inFontSize inTextColor))
```

Here, we've defined a new function called `script-fu-text-box` that takes four parameters, which will later correspond to some text, a font, the font size, and the text's color. The function is currently empty and thus does nothing. So far, so good – nothing new, nothing fancy.

7.3.4.4. Naming Conventions

Scheme's naming conventions seem to prefer lowercase letters with hyphens, which I've followed in the naming of the function. However, I've departed from the convention with the parameters. I like more descriptive names for my parameters and variables, and thus add the "in" prefix to the parameters so I can quickly see that they're values passed into the script, rather than created within it. I use the prefix "the" for variables defined within the script.

It's Gimp convention to name your script functions `script-fu-abc`, because then when they're listed in the procedural database, they'll all show up under `script-fu` when you're listing the functions. This also helps distinguish them from plug-ins.

7.3.4.5. Registering The Function

Now, let's register the function with Gimp. This is done by calling the function `[code] script-fu-register [/code]`. When Gimp reads in a script, it will execute this function, which registers the script with the procedural database. You can place this function call wherever you wish in your script, but I usually place it at the end, after all my other code.

Here's the listing for registering this function (I will explain all its parameters in a minute):

```
(script-fu-register
  "script-fu-text-box"                ;func name
  "Text Box"                          ;menu label
  "Creates a simple text box, sized to fit\
    around the user's choice of text,\
    font, font size, and color."      ;description
  "Michael Terry"                     ;author
  "copyright 1997, Michael Terry"      ;copyright notice
  "October 27, 1997"                  ;date created
  ""                                  ;image type that the script works on
  SF-STRING      "Text:"      "Text Box"  ;a string variable
  SF-FONT        "Font:"      "Charter"    ;a font variable
  SF-ADJUSTMENT  "Font size"   '(50 1 1000 1 10 0 1) ;a spin-button
  SF-COLOR       "Color:"      '(0 0 0)    ;color variable
)
(script-fu-menu-register "script-fu-text-box" "<Toolbox>/Xtns/Script-Fu/Text")
```

If you save these functions in a text file with a `.scm` suffix in your script directory, then choose **Xtns** → **Script-Fu** → **Refresh Scripts**, this new script will appear as **Xtns** → **Script-Fu** → **Text** → **Text Box**.

If you invoke this new script, it won't do anything, of course, but you can view the prompts you created when registering the script (more information about what we did is covered next).

Finally, if you invoke the Procedure Browser – **Xtns** → **Procedure Browser**, you'll notice that our script now appears in the database.

7.3.4.6. Steps For Registering The Script

To register our script with Gimp, we call the function `script-fu-register`, fill in the seven required parameters and add our script's own parameters, along with a description and default value for each parameter.

THE REQUIRED PARAMETERS

- The **name** of the function we defined. This is the function called when our script is invoked (the entry-point into our script). This is necessary because we may define additional functions within the same file, and Gimp needs to know which of these functions to call. In our example, we only defined one function, `text-box`, which we registered.

- The **location** in the menu where the script will be inserted. The exact location of the script is specified like a path in Unix, with the root of the path being either `toolbox` or `right-click`.

If your script does not operate on an existing image (and thus creates a new image, like our `Text Box` script will), you'll want to insert it in the `toolbox` menu – this is the menu in Gimp's main window (where all the tools are located: the selection tools, magnifying glass, etc.).

If your script is intended to work on an image being edited, you'll want to insert it in the menu that appears when you right-click on an open image. The rest of the path points to the menu lists, menus and sub-menus. Thus, we registered our `Text Box` script in the `Text` menu of the `Script-Fu` menu of the `Xtns` menu of the `toolbox` (**Xtns** → **Script-Fu** → **Text** → **Text Box**).

If you notice, the `Text` sub-menu in the `Script-Fu` menu wasn't there when we began – Gimp automatically creates any menus not already existing.

- A **description** of your script, to be displayed in the Procedure Browser.
- **Your name** (the author of the script).
- **Copyright** information.

- The **date** the script was made, or the last revision of the script.
- The **types** of images the script works on. This may be any of the following: RGB, RGBA, GRAY, GRAYA, INDEXED, INDEXEDA. Or it may be none at all – in our case, we’re creating an image, and thus don’t need to define the type of image on which we work.

7.3.4.7. Registering The Script’s Parameters

Once we have listed the required parameters, we then need to list the parameters that correspond to the parameters our script needs. When we list these params, we give hints as to what their types are. This is for the dialog which pops up when the user selects our script. We also provide a default value.

This section of the registration process has the following format:

Param Type	Description	Example
SF-VALUE	Accepts numbers and strings. Note that quotes must be escaped for default text, so better use SF-STRING.	42
SF-STRING	Accepts strings.	"Some text"
SF-COLOR	Indicates that a color is requested in this parameter.	'(0 102 255)
SF-TOGGLE	A checkbox is displayed, to get a Boolean value.	TRUE or FALSE
SF-IMAGE	If your script operates on an open image, this should be the first parameter after the required parameters. Gimp will pass in a reference to the image in this parameter.	3
SF-DRAWABLE	If your script operates on an open image, this should be the second parameter after the SF-IMAGE param. It refers to the active layer. Gimp will pass in a reference to the active layer in this parameter.	17

7.3.5. Giving Our Script Some Guts

Let us continue with our training and add some functionality to our script.

7.3.5.1. Creating A New Image

In the previous lesson, we created an empty function and registered it with Gimp. In this lesson, we want to provide functionality to our script – we want to create a new image, add the user’s text to it and resize the image to fit the text exactly.

Once you know how to set variables, define functions and access list members, the rest is all downhill – all you need to do is familiarize yourself with the functions available in Gimp’s procedural database and call those functions directly. So fire up the DB Browser and let’s get cookin’!

Let’s begin by making a new image. We’ll create a new variable, `theImage`, set to the result of calling Gimp’s built-in function `[code] gimp-image-new [/code]`.

As you can see from the DB Browser, the function `[code] gimp-image-new [/code]` takes three parameters – the image’s width, height and the type of image. Because we’ll later resize the image to fit the text, we’ll make a 10x10 RGB image. We’ll store the image’s width and sizes in some variables, too, as we’ll refer to and manipulate them later in the script.

```
(define (script-fu-text-box inText inFont inFontSize inTextColor)
  (let*
    (
      ; define our local variables
      ; create a new image:
      (theImageWidth 10)
      (theImageHeight 10)
```

```

        (theImage (car
                    (gimp-image-new
                     theImageWidth
                     theImageHeight
                     RGB
                    )
                )
        )
        (theText) ;a declaration for the text
                  ;we create later

```

Note: We used the value RGB to specify that the image is an RGB image. We could have also used 0, but RGB is more descriptive when we glance at the code.

You should also notice that we took the head of the result of the function call. This may seem strange, because the database explicitly tells us that it returns only one value – the ID of the newly created image. However, all Gimp functions return a list, even if there is only one element in the list, so we need to get the head of the list.

7.3.5.2. Adding A New Layer To The Image

Now that we have an image, we need to add a layer to it. We'll call the [code] `gimp-layer-new` [/code] function to create the layer, passing in the ID of the image we just created. (From now on, instead of listing the complete function, we'll only list the lines we're adding to it. You can see the complete script [here](#).) Because we've declared all of the local variables we'll use, we'll also close the parentheses marking the end of our variable declarations:

```

;create a new layer for the image:
(theLayer
  (car
    (gimp-layer-new
     theImage
     theImageWidth
     theImageHeight
     RGB-IMAGE
     "layer 1"
     100
     NORMAL
    )
  )
) ;end of our local variables

```

Once we have the new layer, we need to add it to the image:

```
(gimp-image-add-layer theImage theLayer 0)
```

Now, just for fun, let's see the fruits of our labors up until this point, and add this line to show the new, empty image:

```
(gimp-display-new theImage)
```

Save your work, select **Xtns** → **Script-Fu** → **Refresh Scripts**, run the script and a new image should pop up. It will probably contain garbage (random colors), because we haven't erased it. We'll get to that in a second.

7.3.5.3. Adding The Text

Go ahead and remove the line to display the image (or comment it out with a ; as the first character of the line).

Before we add text to the image, we need to set the background and foreground colors so that the text appears in the color the user specified. We'll use the `gimp-context-set-back/foreground` functions:

```
(gimp-context-set-background '(255 255 255) )
(gimp-context-set-foreground inTextColor)
```

With the colors properly set, let's now clean out the garbage currently in the image by filling the drawable with the background color:

```
(gimp-drawable-fill theLayer BACKGROUND-FILL)
```

With the image cleared, we're ready to add some text:

```
(set! theText
      (car
        (gimp-text-fontname
          theImage theLayer
            0 0
            inText
            0
            TRUE
            inFontSize PIXELS
            "Sans")
        )
      )
```

Although a long function call, it's fairly straightforward if you go over the parameters while looking at the function's entry in the DB Browser. Basically, we're creating a new text layer and assigning it to the variable `theText`.

Now that we have the text, we can grab its width and height and resize the image and the image's layer to the text's size:

```
(set! theImageWidth  (car (gimp-drawable-width  theText) ) )
(set! theImageHeight (car (gimp-drawable-height theText) ) )

(gimp-image-resize theImage theImageWidth theImageHeight 0 0)

(gimp-layer-resize theLayer theImageWidth theImageHeight 0 0)
```

If you're like me, you're probably wondering what a drawable is when compared to a layer. The difference between the two is that a drawable is anything that can be drawn into, including layers but also channels, layer masks, the selection, etc; a layer is a more specific version of a drawable. In most cases, the distinction is not important.

With the image ready to go, we can now re-add our display line:

```
(gimp-display-new theImage)
```

Save your work, refresh the database and give your first script a run!

7.3.5.4. Clearing The Dirty Flag

If you try to close the image created without first saving the file, Gimp will ask you if you want to save your work before you close the image. It asks this because the image is marked as dirty, or unsaved. In the case of our script, this is a nuisance for the times when we simply give it a test run and don't add or change anything in the resulting image – that is, our work is easily reproducible in such a simple script, so it makes sense to get rid of this dirty flag.

To do this, we can clear the dirty flag after displaying the image:

```
(gimp-image-clean-all theImage)
```

This will set dirty count to 0, making it appear to be a "clean" image.

Whether to add this line or not is a matter of personal taste. I use it in scripts that produce new images, where the results are trivial, as in this case. If your script is very complicated, or if it works on an existing image, you will probably not want to use this function.

7.3.6. Extending The Text Box Script

7.3.6.1. Handling Undo Correctly

When creating a script, you want to give your users the ability to undo their actions, should they make a mistake. This is easily accomplished by calling the functions `gimp-undo-push-group-start` and `gimp-undo-push-group-end` around the code that manipulates the image. You can think of them as matched statements that let Gimp know when to start and stop recording manipulations on the image, so that those manipulations can later be undone.

If you are creating a new image entirely, it doesn't make sense to use these functions because you're not changing an existing image. However, when you are changing an existing image, you most surely want to use these functions.

Undoing a script works nearly flawlessly when using these functions.

7.3.6.2. Extending The Script A Little More

Now that we have a very handy-dandy script to create text boxes, let's add two features to it:

- Currently, the image is resized to fit exactly around the text – there's no room for anything, like drop shadows or special effects (even though many scripts will automatically resize the image as necessary). Let's add a buffer around the text, and even let the user specify how much buffer to add as a percentage of the size of the resultant text.
- This script could easily be used in other scripts that work with text. Let's extend it so that it returns the image and the layers, so other scripts can call this script and use the image and layers we create.

7.3.6.3. Modifying The Parameters And The Registration Function

To let the user specify the amount of buffer, we'll add a parameter to our function and the registration function:

```
(define (script-fu-text-box inTest inFont inFontSize inTextColor inBufferAmount)
  (let*
    (
      ; define our local variables
      ; create a new image:
      (theImageWidth 10)
      (theImageHeight 10)
      (theImage (car
                    (gimp-image-new
                     theImageWidth
```

```

        theImageHeight
        RGB
    )
)
)
(theText)          ;a declaration for the text
                   ;we create later

(theBuffer)        ;added
(theLayer
    (car
        (gimp-layer-new
            theImage
            theImageWidth
            theImageHeight
            RGB-IMAGE
            "layer 1"
            100
            NORMAL
        )
    )
)
) ;end of our local variables

[Code here]
)

```

```

(script-fu-register
    "script-fu-text-box"          ;func name
    "Text Box"                    ;menu label
    "Creates a simple text box, sized to fit\
    around the user's choice of text,\
    font, font size, and color." ;description
    "Michael Terry"               ;author
    "copyright 1997, Michael Terry" ;copyright notice
    "October 27, 1997"             ;date created
    ""                             ;image type that the script works on
    SF-STRING      "Text:"          "Text Box"  ;a string variable
    SF-FONT        "Font:"          "Charter"   ;a font variable
    SF-ADJUSTMENT  "Font size"      '(50 1 1000 1 10 0 1) ;a spin-button
    SF-COLOR       "Color:"         '(0 0 0)    ;color variable
    SF-ADJUSTMENT  "Buffer amount"  '(35 0 100 1 10 1 0) ;a slider
)
(script-fu-menu-register "script-fu-text-box" "<Toolbox>/Xtns/Script-Fu/Text")

```

7.3.6.4. Adding The New Code

We're going to add code in two places: right before we resize the image, and at the end of the script (to return the new image, the layer and the text).

After we get the text's height and width, we need to resize these values based on the buffer amount specified by the user. We won't do any error checking to make sure it's in the range of 0-100% because

it's not life-threatening, and because there's no reason why the user can't enter a value like "200" as the percent of buffer to add.

```
(set! theBuffer (* theImageHeight (/ inBufferAmount 100) ) )

(set! theImageHeight (+ theImageHeight theBuffer theBuffer) )
(set! theImageWidth  (+ theImageWidth  theBuffer theBuffer) )
```

All we're doing here is setting the buffer based on the height of the text, and adding it twice to both the height and width of our new image. (We add it twice to both dimensions because the buffer needs to be added to both sides of the text.)

Now that we have resized the image to allow for a buffer, we need to center the text within the image. This is done by moving it to the (x, y) coordinates of (theBuffer, theBuffer). I added this line after resizing the layer and the image:

```
(gimp-layer-set-offsets theText theBuffer theBuffer)
```

Go ahead and save your script, and try it out after refreshing the database.

All that is left to do is return our image, the layer, and the text layer. After displaying the image, we add this line:

```
(list theImage theLayer theText)
```

This is the last line of the function, making this list available to other scripts that want to use it.

To use our new text box script in another script, we could write something like the following:

```
(set! theResult (script-fu-text-box
                  "Some text"
                  "Character" "30"
                  '(0 0 0)
                  "35"
                )
      (gimp-image-flatten (car theResult)))
```

Congratulations, you are on your way to your Black Belt of Script-Fu!

7.4. Creating shortcuts to menu functions

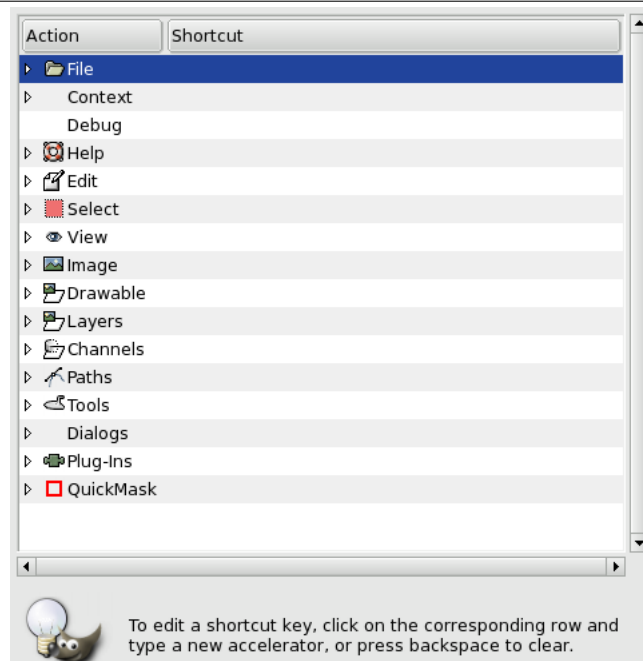
Many functions accessible via the image menu have a default keyboard shortcut. You may want to create a new shortcut for a command that has none and that you often use or, more rarely, edit an existing shortcut. There are two methods for that.

Using dynamic keyboard shortcuts

1. First, you have to activate this possibility by checking the **Use dynamic keyboard shortcuts** option in the **Interface** item of the **Preferences** menu. This option is usually unchecked to prevent inopportune key hits creating unwanted shortcut.
2. On that occasion, also check the **Save keyboard shortcuts on exit** option so that your shortcut is saved.

3. To create a keyboard shortcut, only place mouse pointer on a command: it becomes highlighted. Be careful that mouse pointer doesn't move and type a three keys sequence keeping keys pressed. You will see this sequence appear on the right of the command.
4. If you type a sequence yet used, the command corresponding to this shortcut will be excuted and no new shortcut will be created.
5. Preferably use the Ctrl+Alt+Key sequence for your custom shortcuts.

Figure 7.2. Configure keyboard shortcuts



Using Keyboard Shortcut Editor

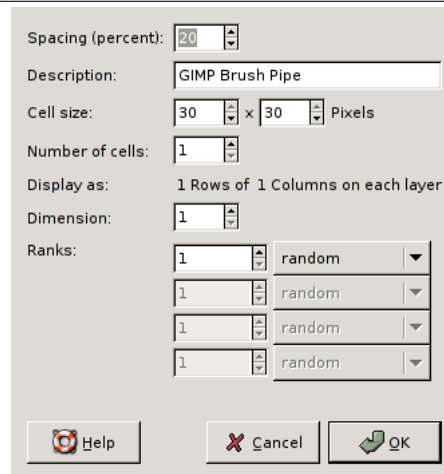
1. You get to this Editor by clicking on the **Configure keyboard shortcuts** in the "Interface" item of the **Preferences** menu.
2. As shown in this dialog, you can select the command you want to create a shortcut for, in the "Action" area. Then you type your key sequence as above. In principle, Space bar should clear shortcut... (it clears but doesn't delete).
3. This shortcut editor also allows you to *control tool parameter setting* with keyboard. At the top of this dialog, you can find a **Context** menu that leads to tool parameters. To make your work easier, tool types are marked with small icons.

NOTE



Custom Keyboard shortcuts are stored in a Gimp's hidden directory (`/home/[username]/.gimp-2.2/menurc`) under Linux `C:\Documents and Settings\[Username]\.gimp-2.2\menurc` under Windows XP. That's a simple text file that you can transport from one computer to another one.

Figure 7.3. The dialog to describe the animated brush.. This dialog box shows up, if you save an image as GIMP image hose



7.5. The GIH dialog box

This dialog box has several options not easy to understand. They allow you to determine the way your brush is animated.

Spacing (Percent) "Spacing" is the distance between consecutive brush marks when you trace out a brushstroke with the pointer. You must consider drawing with a brush, whatever the paint tool, like stamping. If Spacing is low, stamps will be very close and stroke look continuous. If spacing is high, stamps will be separated: that's interesting with a color brush (like "green pepper" for instance). Value varies from 1 to 200 and this percentage refers to brush "diameter": 100% is one diameter.

Description It's the brush name that will appear at the top of Brush Dialog (grid mode) when the brush is selected.

Cell Size That's size of cells you will cut up in layers... Default is one cell per layer and size is that of the layer. Then there is only one brush aspect per layer

We could have only one big layer and cut up in it the cells that will be used for the different aspects of the animated brush.

For instance, we want a 100x100 pixels brush with 8 different aspects. We can take these 8 aspects from a 400x200 pixels layer, or from a 300x300 pixels layer but with one cell unused.

Number of cells That's the number of cells (one cell per aspect) that will be cut in every layer. Default is the number of layers as there is only one layer per aspect.

Display as: This tells how cells have been arranged in layers. If, for example, you have placed height cells at the rate of two cells per layer on four layers, GIMP will display: "1 rows of 2 columns on each layer".

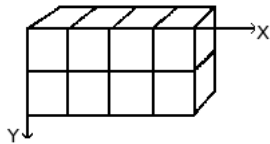
Dimension, Ranks, Selection There things are getting complicated! Explanations are necessary to understand how to arrange cell and layers.

GIMP starts retrieving cells from each layer and stacks them into a FIFO stack (First In First Out: the first in is at the top of the stack and so can be first out). In our example 4 layers with 2 cells in each, we'll have, from top to bottom: first cell of first layer, second cell of first layer, first cell

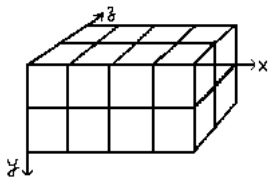
of second layer, second cell of second layer..., second cell of fourth layer. With one cell per layer or with several cells per layer, result is the same. You can see this stack in the Layer Dialog of the resulting .gih image file.

Then GIMP creates a computer array from this stack with the **Dimensions** you have set. You can use four dimensions.

In computer science an array has a "myarray(x,y,z)" form for a 3 dimensions array (3D). It's easy to imagine a 2D array: on a paper it's an array with rows and columns



With a 3d array we don't talk rows and columns but **Dimensions** and **Ranks**. The first dimension is along x axis, the second dimension along y axis, the third along z axis. Each dimension has ranks of cells.



To fill up this array, GIMP starts retrieving cells from the top of stack. The way it fills the array reminds that of an odometer: right rank digits turn first and, when they reach their maximum, left rank digits start running. If you have some memories of Basic programming you will have, with an array(4,2,2), the following succession: (1,1,1),(1,1,2),(1,2,1),(1,2,2),(2,1,1),(2,1,2),(2,2,2),(3,1,1).... (4,2,2). We will see this later in an example.

Besides the rank number that you can give to each dimension, you can also give them a **Selection** mode. You have several modes that will be applied when drawing:

- *Incremental* : GIMP selects a rank from the concerned dimension according to the order ranks have in that dimension
- *Random* : GIMP selects a rank at random from the concerned dimension.
- *Angular* : GIMP selects a rank in the concerned dimension according to the moving angle of the brush.
The first rank is for the direction 0° , upwards. The other ranks are affected, counter clockwise, to an angle whose value is $360/\text{number of ranks}$. So, with 4 ranks in the concerned dimension, the angle will move 90° counterclockwise for each direction change: second rank will be affected to 270° (-90°) (leftwards), third rank to 180° (downwards) and fourth rank to 90° (rightwards).
- *Speed, Pressure, x tilt* and *y tilt* are options for sophisticated drawing tablets.

EXAMPLES

A one dimension image pipe Well! What is all this useful for? We'll see that gradually with examples.

You can actually place in each dimension cases that will give your brush a particular action.

Let us start with a 1D brush which will allow us to study selection modes action. We can imagine it like this:



Follow these steps:

1. Open a new 30x30 pixels image, RGB with Transparent fill type. Using the Text tool create 4 layers "1", "2", "3", "4". Delete the "background" layer.
2. Save this image first with .xcf extension to keep its properties then save it as .gih.
3. The Save As Dialog is opened: select a destination for your image. OK. The GIH dialog is opened: Choose Spacing 100, give a name in Description box, 30x30 for Cell Size, 1 dimension, 1 rank and choose "Incremental" in Selection box. OK.
4. You may have difficulties to save directly in the GIMP Brush directory. In that case, save the .gih file manually into the /usr/share/gimp/gimp 2.0/brushes directory. Then come back into the Toolbox, clic on the brush icon to open the Brush Dialog then click on "Refresh". Your new brush appears in the Brush window. Select it. Select pencil tool for instance and click and hold with it on a new image

2 3 4 1 2 3 4 1 2 3

You see 1, 2, 3, 4 digits following one another in order.

5. Take your .xcf image file back and save it as .gih setting Selection to "Random": digits will be displayed at random order:

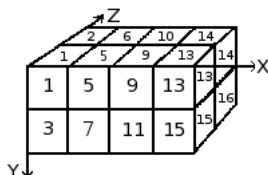
1 3 2 1 4 3 4 2 3 4 4

6. Now select "Angular" Selection:

2 2 3
3
4 4 4 3

A 3 dimensions image hose We are now going to create a 3D animated brush: its orientation will vary according to brush direction, it will alternate Left/Right hands regularly and its color will vary at random between black and blue.

The first question we have to answer to is the number of images that is necessary. We reserve the first dimension (x) to the brush direction (4 directions). The second dimension (y) is for Left/Right alternation and the third dimension (z) for color variation. Such a brush is represented in a 3D array "myarray(4,2,2)":



There are 4 ranks in first dimension (x), 2 ranks in second dimension (y) and 2 ranks in third dimension (z). We see that there are $4 \times 2 \times 2 = 16$ cells. We need 16 images.

1. *Creating images of dimension 1 (x):* Open a new 30x30 pixels image, RGB with Transparent Fill Type. Using the zoom draw a left hand with fingers upwards. Save it as handL0k.xcf (hand Left 0° Black).

Open the Layer Dialog. Double click on the layer to open the Layer Attributes Dialog and rename it to handL0k.

Duplicate the layer. Let visible only the duplicated layer, select it and apply a 90° rotation (Layer/Transform/ 90° rotation counter-clockwise). Rename it to handL-90k.

Repeat the same operations to create handL180k and handL90k.

2. *Creating images of dimension 2 (y):* This dimension in our example has two ranks, one for left hand and the other for right hand. The left hand rank exists yet. We shall build right hand images by flipping it horizontally.

Duplicate the handL0k layer. Let it visible only and select it. Rename it to handR0K. Apply Layer/Transform/Flip Horizontally.

Repeat the same operation on the other left hand layers to create their right hand equivalent.

Re-order layers to have a counter-clockwise rotation from top to bottom, alternating Left and Right: handL0k, handR0k, handL-90k, handR-90k, ..., handR90k.

3. *Creating images of dimension 3 (z):* The third dimension has two ranks, one for black color and the other for blue color. The first rank, black, exists yet. We will see that images of dimension 3 will be a copy, in blue, of the images of dimension 2. So we will have our 16 images. But a row of 16 layers is not easy to manage: we will use layers with two images.

Select the handL0k layer and let it visible only. Using Image/Canvas Size change canvas size to 60x30 pixels.

Duplicate hand0k layer. On the copy, fill the hand with blue using Bucket Fill tool.

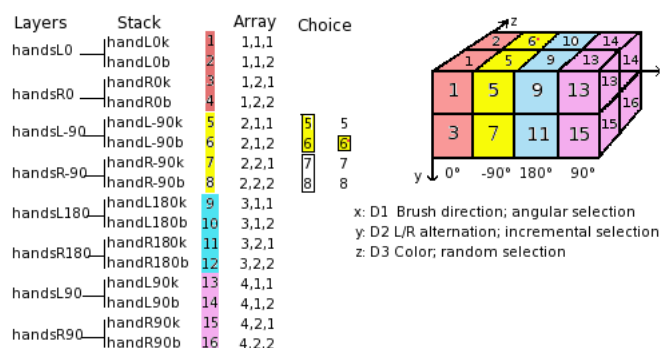
Now, select the Move tool. Double click on it to accede to its properties: check "Move the Current Layer" option. Move the blue hand into the right part of the layer precisely with the help of Zoom.

Make sure only handL0k and its blue copy are visible. Right click on the Layer Dialog: Apply the "Merge Visible Layers" command with the option "Expand as Necessary". You get a 60x30 pixels layer with the black hand on the left and the blue hand on the right. Rename it to "handL0".

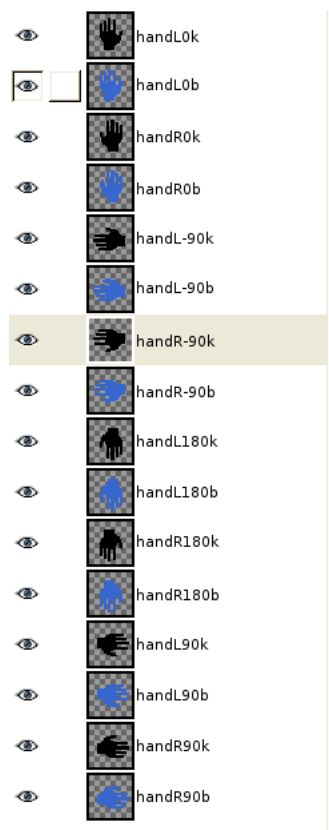
Repeat the same operations on the other layers.

4. *Set layers in order:* Layers must be set in order so that GIMP can find the required image at some point of using the brush. Our layers are yet in order but we must understand more generally how to have them in order. There are two ways to imagine this setting in order. The first method is mathematical: GIMP divides the 16 layers first by 4; that gives 4 groups of 4 layers for the first dimension. Each group represents a direction of the brush. Then, it divides each group by 2; that gives 8 groups of 2 layers for the second dimension: each group represents a L/R alternation. Then another division by 2 for the third dimension to represent a color at random between black and blue.

The other method is visual, by using the array representation. Correlation between two methods is represented in next image:



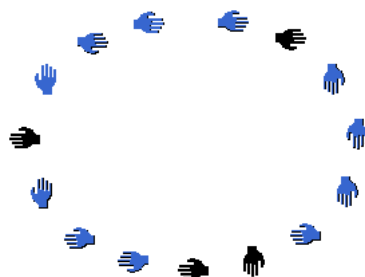
How will GIMP read this array?: GIMP starts with the first dimension which is programmed for "angular", for instance -90°. In this -90° rank, in yellow, in the second dimension, it selects a L/R alternation, in an "incremental" way. Then, in the third dimension, in a random way, it chooses a color. Finally, our layers must be in the following order:



5. Voilà. Your brush is ready. Save it as .xcf first then as .gih with the following parameters:
 Spacing:100 Description:Hands Cell Size: 30x30 Number of cells:16 Dimensions: 3
- Dimension 1: 4 ranks Selection: Angular
 - Dimension 2: 2 ranks Selection: Incremental
 - Dimension 3: 2 ranks Sélection: Random

Place your .gih file into GIMP brush directory and refresh the brush box. You can now use your brush. Unfortunately GIMP 2.0 is bug-ridden and you may have some difficulties with brush orientation.

Figure 7.4. Here is the result by stroking an elliptical selection with the brush:. This brush alternates right hand and left hand regularly, black and blue color at random, according to four brush directions.



7.6. Creating a brush with variable size

You can create a brush with a size which will vary by rotating the mouse wheel or by using the keyboard arrow keys.

1. Start with opening the Brush dialog by double-clicking on the Brush area in Toolbox, or by going through **File** → **Dialogs** → **Brushes**.
2. Click on the **New Brush** button to open the Brush Editor dialog. Name your brush at once, “Dynamic” for instance. Your brush will appear in the Brush Dialog with a blue corner.
3. Now, go to **File** → **Preferences** → **Input Controllers**.
 - Check the **Enable this controller** box.
 - Scroll through the **Events** list and select **Scroll up (Shift)**. Avoid Scroll up (Ctrl) because **Ctrl** is yet used by tools to turn to the Color Picker mode.
 - Click on the **Edit** button to open a window that allows you to assign an action to the selected event. If an action is assigned to the event yet, the window opens on this event; else, click on the small triangular button close to the **Context** item to drop the list down. Scroll through this list and select the **context-brush-radius-increase** item. (You could choose context-brush-radius-increase-skip). Click on OK.
 - Do the same way to assign the “context-brush-radius-decrease” action to the “Scroll down (Shift)” event to decrease the brush size.
4. Save your brush by clicking on the **Save** button in the Brush Editor.

Now, if you have selected your Dynamic brush, when you work with a tool that has a “Brush” option while pressing the **Shift** key, the brush size will vary by using the mouse wheel. This change will be visible in real time in the brush area of the Toolbox and in the Brush Dialog.

By enabling the “Main Keyboard” tab, you can, in the same way, assign an action to the events of the keyboard arrow keys.

NOTE



Actions are not removed from the window when you delete the brush. You have to delete them manually by clicking on the **Delete** button after selecting them.

Part III.

The GIMP Function Reference

8. Toolbox

8.1. The Toolbox

The GIMP provides a comprehensive toolbox in order to quickly perform basic tasks such as making selections or drawing paths. The many tools contained within The GIMP's toolbox are discussed in detail here.

The GIMP has a diverse assortment of tools that let you perform a large variety of tasks. The tools can be thought of as falling into five categories: *Selection tools*, which specify or modify the portion of the image that will be affected by subsequent actions; *Paint tools*, which alter the colors in some part of the image; *Transform tools*, which alter the geometry of the image; *Color tools*, which alter the distribution of colors across the entire image; and *Other tools*, which don't fall into the other four categories.

(In case you're curious, in Gimp lingo a "tool" is a way of acting on an image that requires access to its display, either to let you indicate what you want to do by moving the pointer around inside the display, or to show you interactively the results of changes that you have made. But if you want to think of a tool as a saw, and an image as a piece of wood, it probably won't do you a great deal of harm.)

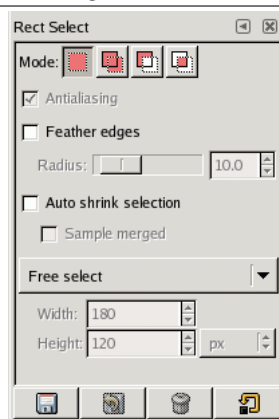
Most tools can be activated by clicking on an icon in the Toolbox. Some, however (namely, the Color tools), are accessible only via the menus, either as *Tools->Color Tools* or as *Layer->Colors*. Every tool, in fact, can be activated from the *Tools* menu; also, every tool can be activated from the keyboard using an accelerator key.

In the default setup, created when GIMP is first installed, not all tools show icons in the Toolbox: the Color tools are omitted. You can customize the set of tools that are shown in the Toolbox using the **Tools dialog**. There are two reasons you might want to do this: first, if you only rarely use a tool, it might be easier to find the tools you want if the distracting icon is removed; second, if you use the Color tools a lot, you might find it convenient to have icons for them easily available. In any case, regardless of the Toolbox, you can always access any tool at any time using the **Tools** menu from an image menubar.

The shape of the cursor changes when it is inside an image, to one that indicates which tool is active.

8.1.1. Tool Options

Figure 8.1. Tool Options dialog for the Rectangle Select tool.



If you have things set up like most people do, activating a tool causes its Tool Options dialog to appear below the Toolbox. If you don't have things set up this way, you probably should: it is very difficult to use tools effectively without being able to manipulate their options.

TIP



The Tool Options appear beneath the Toolbox in the default setup. If you lose it somehow, you can get it back by creating a new Tool Options dialog using *File->Dialogs->Tool Options*, and then docking it below the Toolbox. See the section on [Dialogs and Docking](#) if you need help.

Each tool has its own specific set of options. The choices you make for them are kept throughout the session, until you change them. In fact, the tool options are maintained from session to session. The persistence of tool options across sessions can sometimes be an annoying nuisance: a tool behaves very strangely, and you can't figure out why until you remember that you were using some unusual option the last time you worked with it, two weeks ago.

At the bottom of the Tool Options dialog appear four buttons:

- **Save Options to.** This button allows you to save the settings for the current tool, so that you can restore them later. It brings up a small dialog allowing you to give a name to the array of saved options. When you Restore options, only saved sets for the active tool are shown, so you need not worry about including the name of the tool when you assign a name here.
- **Restore Options.** This button allows you to restore a previously saved set of options for the active tool. If no option-sets have ever been saved for the active tool, the button will be insensitive. Otherwise, clicking it will bring up a menu showing the names of all saved option sets: choosing a menu entry will apply those settings.
- **Delete Options.** This button allows you to delete a previously saved set of options for the active tool. If no option-sets have ever been saved for the active tool, the button will be insensitive. Otherwise, clicking it will bring up a menu showing the names of all saved option sets: choosing a menu entry will delete those settings.
- **Reset Options.** This button resets the options for the active tool to their default values.

8.2. Selection Tools

8.2.1. Common Features

Selection tools are designed to select regions from images or layers so you can work on them without affecting the unselected areas. Each tool has its own individual properties, but the selection tools also share a number of options and features in common. These common features are described here; the variations are explained in the following sections for each tool specifically. If you need help with what a “selection” is in Gimp, and how it works, see [Selection](#).

There are six selection tools:

- Rectangle Select
- Ellipse Select
- Free Select (the Lasso)
- Select Contiguous Regions (the Magic Wand)
- Select by Color
- Select Shapes from Image (Intelligent Scissors)

In some ways the Path tool can also be thought of as a selection tool: any closed path can be converted into a selection. It also can do a great deal more, though, and does not share the same set of options with the other selection tools.

8.2.1.1. Key modifiers (Defaults)

The behavior of selection tools is modified if you hold down the **Ctrl**, **Shift**, and/or **Alt** keys while you use them.

NOTE



Advanced users find the modifier keys very valuable, but novice users often find them confusing. Fortunately, it is possible for most purposes to use the Mode buttons (described below) instead of modifier keys.

Ctrl When creating a selection, holding down the **Ctrl** key can have two different actions according to the way you use it:

- If you hold down the key *before clicking* to start the selection, this selection will be in *Subtraction* mode as long as you press the key.
- If you hold down the **Ctrl** key *after clicking* to start the selection, the effect will depend on the tool you are using.

Alt Holding **Alt** will allow movement of the current selection (only its frame, not its content). If the whole image is moved instead of the selection only, try **Shift+Alt**. Note that the **Alt** key is sometimes intercepted by the windowing system (meaning that Gimp never knows that it was pressed), so this may not work for everybody.

Shift When creating a selection, holding down the **Shift** key can have two different actions according to the way you use it:

- If you hold down the key *before clicking* to start the selection, this selection will be in *Addition* mode as long as you press the key.
- If you hold down the **Shift** key *after clicking* to start the selection, the effect will depend on the tool you are using: for example, the selection will be a square with the Rectangle Select tool.

Ctrl+Shift Using **Ctrl-Shift** together can do a variety of things, depending on which tool is used. Common to all selection tools is that the selection mode will be switched to intersection, so that after the operation is finished, the selection will consist of the intersection of the region traced out with the pre-existing selection. It is an exercise for the reader to play with the various combinations available when performing selections while holding **Ctrl-Shift** and releasing either both or either prior to releasing the mouse button.

Space bar Pressing the **Space Bar** while using a selection tool transforms this tool into Move tool as long as you press the bar.

8.2.1.2. Options

Here we describe the tool options that apply to all selection tools: options that apply only to some tools, or that affect each tool differently, are described in the sections devoted to the individual tools. The current settings for these options can be seen in the Tool Options dialog, which you should always have visible when you are using tools. (Most users keep it docked directly below the Toolbox.) To make the interface consistent, the same options are presented for all selection tools, even though some of them don't have any effect for some of the tools.

Mode This determines the way that the selection you create is combined with any pre-existing selection. Note that the functions performed by these buttons can be duplicated using modifier keys, as described above. For the most part, advanced users use the modifier keys; novice users find the mode buttons easier.



Replace mode will cause any existing selection to be destroyed or replaced when the new selection is created.



Add mode will cause the new selection to be added to any existing selection regions.



Subtract mode will remove the new selection area from any existing selection regions.



Výsledkem použití režimu průnik je výběr pouze v oblastech, kde se starý a nový výběr překrývají.



Intersection mode will make a new selection from the area where the existing selection region and the new selection region overlap.

Antialiasing This option only affects a few of the selection tools: it causes the boundary of the selection to be drawn more smoothly.

Feather Edges This options allows the boundary of the selection to be blurred, so that points near the boundary are only partially selected. For further information regarding feathering, see the glossary entry [Feathering](#).

8.2.1.3. Additional information

NOTE



When moving a selection beyond the boundaries of the image canvas, the selection will be cropped to the image area. Selections can exist on the visible canvas only. Selection movements and changes are, however, kept in the undo buffer should you need to repair an error.

8.2.2. Rectangle Selection Tool

The Rectangle Selection tool is designed to select rectangular regions of an image: it is the most basic of the selection tools, but very commonly used. For information on selections and how they are used in GIMP see [Selections](#); for information on features common to all selection tools see [Selection Tools](#).


This tool is also used for rendering a rectangle on an image. To render a filled rectangle, create a rectangular selection, and then fill it using the [Bucket Fill tool](#). To create a rectangular outline, the simplest and most flexible approach is to create a rectangular selection and then [stroke](#) it.

If you want to round the edges of a rectangular selection, the easiest method is using **Select** → **Rounded Rectangle** from the image menu.

Figure 8.2. Rectangle Select icon in the Toolbox

8.2.2.1. How to Activate

You can access to the Selection Tool in different ways:

- From the image menu bar **Tools** → **Selection Tools** → **Rect Select**;
- By clicking on the tool icon  in the ToolBox,
- By using the keyboard shortcut **R**.

8.2.2.2. Key modifiers

NOTE



See [Selection Tools](#) for help with modifier keys that affect all these tools in the same way. Only effects that are specific to the Rectangle Select tool are explained here.

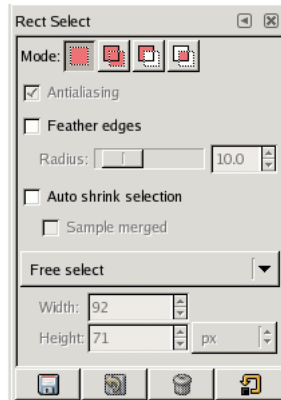
- **Ctrl**: Pressing the Ctrl key after starting your selection, and holding it down until you are finished, causes your starting point to be used as the center of the selected rectangle, instead of a corner. Note that if you press the Ctrl key *before* starting to make the selection, the resulting selection will be subtracted from the existing selection.
- **Shift**: Pressing the Shift key after starting your selection, and holding it down until you are finished, constrains the selection to be square. Note that if you press the Shift key *before* starting to make the selection, the resulting selection will be added to the existing selection.
- **Ctrl-Shift**: Pressing both keys after starting your selection combines the two effects, giving you a square selection centered on your starting point. Note that pressing these keys before starting your selection intersects the resulting selection with the existing one.

8.2.2.3. Tool Options

NOTE



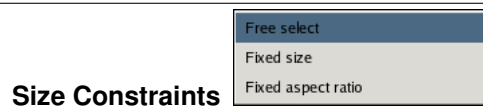
See [Selection Tools](#) for help with options that are common to all these tools. Only options that are specific to the Rectangle Select tool are explained here.

Figure 8.3. Tool Options for the Rectangle Select tool

Antialiasing This option performs no function for this tool and is present to unify the user interface between the various selection types.

Auto Shrink Selection The **Auto Shrink Selection** checkbox will make your next selection automatically shrink to the nearest rectangular shape available on the image layer. The algorithm for finding the best rectangle to shrink to is “intelligent”, which in this case means that it sometimes does surprisingly sophisticated things, and sometimes does surprisingly strange things. In any case, if the region that you want to select has a solid-colored surround, auto-shrinking will always pick it out correctly. Note that the resulting selection does not need to have the same shape as the one you sweep out.

If **Sample Merged** is also enabled, then Auto Shrink will use the pixel information from the visible display of the image, rather than just from the active layer. For further information regarding Sample Merge, see the glossary entry [Sample Merge](#).

Figure 8.4. Size Constraint Option Menu for the Rectangle Select tool

This menu allows you the option of constraining the shape of the rectangle in three different ways.

- **Free Select.** This option places no constraint on the rectangle.
- **Fixed Size.** This will allow you to manually specify a size for the selection using the Width, Height, and Unit controls.
- **Fixed Aspect Ratio.** This option allows you to resize the selection while keeping the aspect ratio fixed according to the two numbers entered in the Width and Height controls.

8.2.3. Ellipse Selection Tool

The Ellipse Selection tool is designed to select circular and elliptical regions from an image, with high-quality anti-aliasing if you want it. For information on selections and how they are used in GIMP see [Selections](#); for information on features common to all selection tools see [Selection Tools](#).

This tool is also used for rendering a circle or ellipse on an image. To render a filled ellipse, create an elliptical selection, and then fill it using the [Bucket Fill tool](#). To create an elliptical outline, the simplest and most flexible approach is to create an elliptical selection and then [stroke](#) it. However, the quality of anti-aliasing with this approach is rather crude. A higher quality outline can be obtained by creating two elliptical selections with different sizes, subtracting the inner one from the outer one; however this is not always easy to get right.

Figure 8.5. Ellipse Select icon in the Toolbox

8.2.3.1. How to Activate

The Ellipse Selection Tool can be activated from an image menu as **Tools** → **Selection Tools** → **Ellipse Select**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **e**.

8.2.3.2. Key modifiers

NOTE



See **Selection Tools** for help with modifier keys that affect all these tools in the same way. Only effects that are specific to the Ellipse Select tool are explained here.


- **Ctrl**: Pressing the Ctrl key after starting your selection, and holding it down until you are finished, causes your starting point to be used as the center of the selected ellipse, instead of a corner of the rectangle that may contain it. Note that if you press the Ctrl key *before* starting to make the selection, the resulting selection will be subtracted from the existing selection.
- **Shift**: Pressing the Shift key after starting your selection, and holding it down until you are finished, constrains the selection to be a circle. Note that if you press the Shift key *before* starting to make the selection, the resulting selection will be added to the existing selection.
- **Ctrl-Shift**: Pressing both keys combines the two effects, giving you a circular selection centered on your starting point.

8.2.3.3. Options

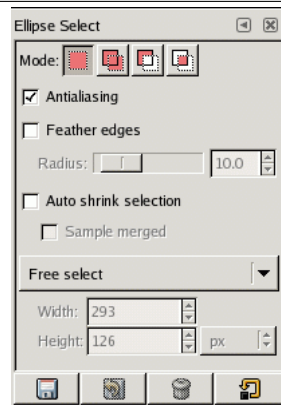
NOTE



See **Selection Tools** for help with options that are common to all these tools. Only options that are specific to the Ellipse Select tool are described here.

You can access to the Ellipse Selection options by double-clicking on the  icon.

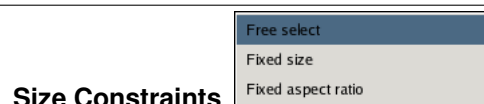
Antialiasing Checking this option will make the edge of the selection appear smoother, by partially selecting pixels that the edge passes through. The idea of antialiasing is discussed in more detail

Figure 8.6. Tool Options for the Ellipse Select tool

under the glossary entry [Antialiasing](#). You will probably find that you get more satisfactory results by using it, in most cases. The main situation where you might want not to use it is in cutting and pasting, where partial selection can sometimes create strange color fringes.

Auto Shrink Selection The **Auto Shrink Selection** checkbox will make your next selection automatically shrink to the nearest elliptical shape available on the image layer. The algorithm for finding the best ellipse to shrink to is “intelligent”, which in this case means that it sometimes does surprisingly sophisticated things, and sometimes does surprisingly strange things. In any case, if the region that you want to select has a solid-colored surround, auto-shrinking will always pick it out correctly. Note that the resulting elliptical selection does not need to have the same shape as the one you sweep out.

If **Sample Merged** is also enabled, then the Auto Shrink will use the pixel information from all the layers of the image. For further information regarding Sample Merge, see the glossary entry [Sample Merged](#).

Figure 8.7. Size Constraint Option Menu for the Ellipse Select tool

This menu allows you the option of constraining the shape of the ellipse in three different ways.

- **Free Select.** This option places no constraint on the ellipse.
- **Fixed Size.** This will allow you to manually specify a size for the selection using the Width, Height, and Unit controls.
- **Fixed Aspect Ratio.** This option allows you to resize the selection while keeping the aspect ratio fixed according to the two numbers entered in the Width and Height controls.

8.2.4. Free Selection Tool (Lasso)

The Free Selection tool, or Lasso, lets you create a selection by drawing it free-hand with the pointer, while holding down the left mouse button (or, for a stylus, pressing it against the tablet). When you release the mouse button, the selection is closed by connecting the current pointer location to the start location with a straight line. You can go outside the edge of the image display and come back in if you want to. The Lasso is often a good tool to use for “roughing in” a selection; it is not so good for precise definition. Experienced users find that it is often convenient to begin with the lasso tool, but then switch to [QuickMask](#) mode for detail work.

Figure 8.8. Free Selection icon in the Toolbox


For information on selections and how they are used in GIMP see [Selections](#). For information on features common to all selection tools see [Selection Tools](#).

NOTE



The Free Selection tool is much easier to use with a tablet than with a mouse.

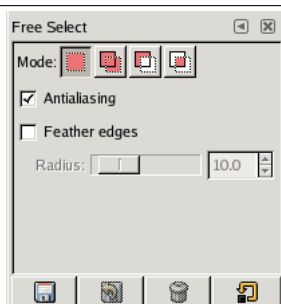
8.2.4.1. How to Activate

The Lasso Tool can be activated from an image menu as **Tools** → **Selection Tools** → **Free Select**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **f**.

8.2.4.2. Key modifiers

The Free Select tool does not have any special key modifiers, only the ones that affect all selection tools in the same way. See [Selection Tools](#) for help with these.

8.2.4.3. Options

Figure 8.9. Tool Options for the Lasso tool

The Free Select tool has no special tool options, only the ones that affect all selection tools in the same way. See [Selection Tools](#) for help with these.

8.2.5. Fuzzy Selection Tool (Magic Wand)

The Fuzzy Select (Magic Wand) tool is designed to select areas of the current layer or image based on color similarity. It starts selecting when you click at a spot in the image, and expands outward like water flooding low-lying areas, selecting contiguous pixels whose colors are similar to the starting pixel. You

Figure 8.10. Magic Wand tool icon in the Toolbox


can control the threshold of similarity by dragging the mouse downward or to the right: the farther you drag it, the larger the selected region. And you can reduce the selection by dragging upwards or to the left.

When using this tool, it is very important to pick the right starting point. If you select the wrong spot, you might get something very different from what you want, or even the opposite.

The Wand is a good tool for selecting objects with sharp edges. It is fun to use, so beginners often start out using it a lot. You will probably find, however, that the more you use it, the more frustrated you become with the difficulty of selecting exactly what you want, no more, no less. Perhaps the most frustrating aspect is that after you have released the mouse button, you can't make small adjustments to the threshold: you have to start over again from scratch. More experienced users find that the **Path** and **Color Select** tools are often more efficient, and use the Wand less. Still, it is useful for selecting an area within a contour, or touching up imperfect selections. It often works very well for selecting a solid-colored (or nearly solid-colored) background area.

Note that as the selected area expands outward from the center, it does not only propagate to pixels that touch each other: it is capable of jumping over small gaps. The distance it can jump over is set in the **Tool Options** page of the Preferences dialog: the "Default threshold" for Finding Contiguous Regions. By raising or lowering this value, you can make the Magic Wand either more or less aggressive. (Filling with the Bucket Fill and Blend tools will also be affected.)

8.2.5.1. How to Activate

The Magic Wand Tool can be activated from an image menu as **Tools** → **Selection Tools** → **Fuzzy Select**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **z**. ("Z" stands for "Zauber", the German word for Magic.)

8.2.5.2. Key modifiers (Defaults)

The Fuzzy Select tool does not have any special key modifiers, only the ones that affect all selection tools in the same way. See **Selection Tools** for help with these.

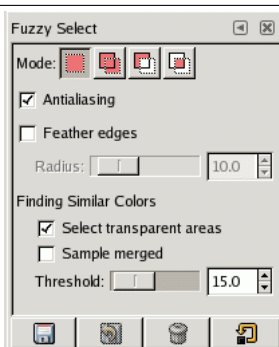
8.2.5.3. Options

NOTE



See **Selection Tools** for help with options that are common to all these tools. Only options that are specific to the Magic Wand tool are explained here.

Finding Similar Colors These options affect the way the Magic Wand expands the selection out from the initial point.

Figure 8.11. Tool Options for the Magic Wand tool

Select Transparent Areas This option gives the Magic Wand the ability to select areas that are completely transparent. If this option is not checked, transparent areas will never be included in the selection.

Sample Merged This option becomes relevant when you have several layers in your image, and the active layer is either semi-transparent or is set to another Layer Mode than Normal. If this is the case, the colors present in the layer will be different from the colors in the composite image. If the "Sample Merged" option is unchecked, the wand will only react to the color in the active layer when it creates a selection. If it is checked it will react to the composite color of all visible layers. For further information, see the glossary entry [Sample Merged](#).


Threshold This slider determines the range of colors that will be selected at the moment you click the pointer on the initial point, before dragging it: the higher the threshold, the larger the resulting selection. After the first button-press, dragging the pointer downward or to the right will increase the size of the selection; dragging upward or to the left will decrease it. Thus, you have the same set of possibilities regardless of the Threshold setting: what differs is the amount of dragging you have to do to get the result you want.

8.2.6. Select By Color Tool

Figure 8.12. Select by Color tool icon in the Toolbox

The Select by Color tool is designed to select areas of an image based on color similarity. It works a lot like the Fuzzy Select tool ("Magic Wand"). The main difference between them is that the Magic Wand selects *contiguous* regions, with all parts connected to the starting point by paths containing no large gaps; while the Select by Color tool selects all pixels that are sufficiently similar in color to the pixel you click on, regardless of where they are located. Also, clicking and dragging in the image has no effect on the Select by Color tool.

8.2.6.1. How to Activate

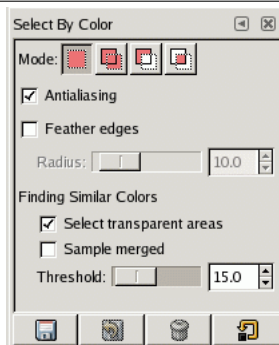
The Select By Color Tool can be activated from an image menu as **Tools** → **Selection Tools** → **Select by Color**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **Shift-Ctrl-C**

8.2.6.2. Key modifiers (Defaults)

The select by color tool does not have any special key modifiers, only the ones that affect all selection tools in the same way. See [Selection Tools](#) for help with these.

8.2.6.3. Options

Figure 8.13. Tool Options for the Select by Color tool



NOTE



See [Selection Tools](#) for help with options that are common to all these tools. Only options that are specific to the Select by Color tool are explained here. Note that they are the same options as the Magic Wand tool has.

Finding Similar Colors These options affect the way the Select by Color tool expands the selection out from the initial point.

- **Select Transparent Areas.** This option gives the Select by Color tool the ability to select areas that are completely transparent. If this option is not checked, transparent areas will never be included in the selection.
- **Sample Merged.** This option becomes relevant when you have several layers in your image, and the active layer is either semi-transparent or is set to another Layer Mode than Normal. If this is the case, the colors present in the layer will be different from the colors in the composite image. If the "Sample Merged" option is unchecked, the Select by Color tool will only react to the color in the active layer when it creates a selection. If it is checked it will react to the composite color of all visible layers. For further information, see the glossary entry [Sample Merged](#).
- **Threshold.** This slider determines the range of colors that will be selected: the higher the threshold, the larger the resulting selection.

NOTE



Regarding moving selection, this tool doesn't work like others: when selection by color is created, you can move it only if you select another selection tool...

8.2.7. Scissors Tool

Figure 8.14. Intelligent Scissors tool icon in the Toolbox.



The Intelligent Scissors tool is an interesting piece of equipment: it has some features in common with the Lasso, some features in common with the Path tool, and some features all its own. It is useful when you are trying to select a region defined by strong color-changes at the edges. To use the Scissors, you click to create a set of "control nodes" at the edges of the region you are trying to select. The tool produces a continuous curve passing through these control nodes, following any high-contrast edges it can find. If you are lucky, the path that the tool finds will correspond to the contour you are trying to select.

Each time you left-click with the mouse, you create a new control point, which is connected to the last control point by a curve that tries to follow edges in the image. To finish, click on the first point (the cursor changes to indicate when you are in the right spot). You can adjust the curve by dragging the control nodes, or by clicking to create new control nodes. When you are satisfied, click anywhere inside the curve to convert it into a selection.


WARNING



Be sure not to click inside the curve until you are completely done adjusting it. Once you have converted it into a selection, undoing takes you back to zero, and you will have to start constructing the curve again from scratch if you need to change it. Also be sure not to switch to a different tool, or again all of your carefully created control nodes will be lost. (But you still can transform your selection into a path and work it with the Path tool.)

Unfortunately, there seem to be some problems with the edge-following logic for this tool, with the result that the selections it creates tend to be pretty crude in a lot of cases. A good way to clean them up is to switch to **QuickMask** mode, and use paint tools to paint in the problematic parts. On the whole, most people find the Path tool to be more useful than the Scissors, because, even though it does not have the intelligent edge-finding capability, the paths it produces persist until you delete them, and can be altered at any time.

8.2.7.1. How to Activate

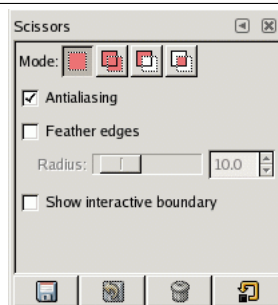
The Intelligent Scissors can be activated from an image menu as **Tools** → **Selection Tools** → **Intelligent Scissors**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **i**.

8.2.7.2. Key modifiers (Defaults)

The Scissor tool does not have any special key modifiers, only the ones that affect all selection tools in the same way. See [Selection Tools](#) for help with these.

8.2.7.3. Options

Figure 8.15. Tool Options for the Intelligent Scissors



NOTE



See [Selection Tools](#) for help with options that are common to all these tools. Only options that are specific to the Intelligent Scissors tool are explained here.

Show Interactive Boundary If this option is enabled, dragging a control node during placement will indicate the path that will be taken by the selection boundary. If it is not enabled, the node will be shown connected to the previous node by a straight line while you are dragging it around, and you won't see the resulting path until you release the pointer button. On slow systems, if your control nodes are far apart, this may give a bit of a speed-up.

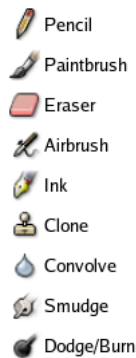
8.3. Brush Tools

8.3.1. Common Features

The GIMP Toolbox includes nine “brush tools”, all grouped together at the bottom (in the default arrangement). The feature they all have in common is that all of them are used by moving the pointer across the image display, creating brushstrokes. Four of them – the Pencil, Paintbrush, Airbrush, and Ink tools – behave like the intuitive notion of “painting” with a brush. The others use a brush to modify an image in some way rather than paint on it: the Eraser erases; the Clone tool copies from a pattern or image; the Convolve tool blurs or sharpens; the Dodge/Burn tool lightens or darkens; and the Smudge tool smears.

The advantages of using GIMP with a tablet instead of a mouse probably show up more clearly for brush tools than anywhere else: the gain in fine control is invaluable. These tools also have special “Pressure sensitivity” options that are only usable with a tablet.

In addition to the more common “hands-on” method, it is possible to apply brush tools in an automated way, by creating a selection or path and then “stroking” it. You can choose to stroke with any of

Figure 8.16. The Brush tools

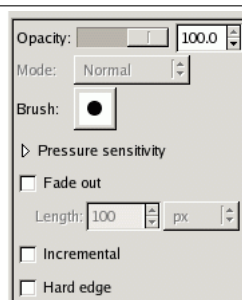
the brush tools, including nonstandard ones such as the Eraser, Smudge tool, etc., and any options you set for the tool will be applied. See the section on [Stroking](#) for more information.

Brush tools work not only on image layers, but on other types of drawable objects as well: layer masks, channels, and the selection. To apply a brush tool to a layer mask or channel, simply make it the image's active drawable by clicking on it in the Layers dialog or Channels dialog. To apply a brush tool to the selection, switch to [QuickMask](#) mode. "Painting the selection" in this way is a very powerful method for efficiently creating precise selections.

8.3.1.1. Key modifiers

- **Ctrl:** Holding down the Ctrl key has a special effect on every brush tool except the ink tool. For the Pencil, Paintbrush, Airbrush, Eraser, and Smudge tools, it switches them into "color picker" mode, so that clicking on an image pixel causes GIMP's foreground to be set to the active layer's color at that point (or, for the Eraser, GIMP's background color). For the Clone tool, the Ctrl key switches it into a mode where clicking sets the reference point for copying. For the Convolve tool, the Ctrl key switches between blur and sharpen modes; the the Dodge/Burn tool, it switches between dodging and burning.
- **Shift:** Holding down the Shift key has the same effect on all brush tools: it places the tool into *straight line* mode. To create a straight line with any of the brush tools, first click on the starting point, *then* press the Shift key. As long as you hold it down, you will see a thin line connecting the previously clicked point with the current pointer location. If you click again, while continuing to hold down the Shift key, a straight line will be rendered. You can continue this process to create a series of connected line segments.
- **Ctrl-Shift:** Holding down both keys puts the tool into *constrained straight line* mode. This is similar to the effect of the Shift key alone, except that the orientation of the line is constrained to the nearest multiple of 15 degrees. Use this if you want to create perfect horizontal, vertical, or diagonal lines.

8.3.1.2. Tool Options

Figure 8.17. Tool Options shared by all brush tools

Many tool options are shared by several brush tools: these are described here. Options that apply only to one specific tool, or to a small number of tools, are described in the sections devoted to those tools.

Opacity The Opacity slider sets the transparency level for the brush operation. To understand how it works, imagine that instead of altering the active layer, the tool creates a transparent layer above the active layer and acts on that layer. Changing Opacity in the Tool Options has the same effect that changing opacity in the Layers dialog would have in the latter situation. It controls the “strength” of all brush tools, not just those that paint on the active layer. In the case of the Eraser, this can come across as a bit confusing: it works out that the higher the “opacity” is, the more transparency you get.

Mode The Mode dropdown list provides a selection of paint application modes; a list of modes can be found in the glossary. As with the opacity, the easiest way to understand what the Mode setting does is to imagine that the paint is actually applied to a layer above the layer you are working on, with the layer combination mode in the Layers dialog set to the selected mode. You can obtain a great variety of special effects in this way. The Mode option is only usable for tools that can be thought of as adding color to the image: the Pencil, Paintbrush, Airbrush, Ink, and Clone tools. For the other brush tools, the option appears for the sake of consistency but is always grayed out.

Brush The brush determines how much of the image is affected by the tool, and how it is affected, when you trace out a brushstroke with the pointer. GIMP allows you to use several different types of brushes, which are described in the [Brushes](#) section. The same brush choices are available for all brush tools except the Ink tool, which uses a unique type of procedurally generated brush. The colors of a brush only come into play for tools where they are meaningful: the Pencil, Paintbrush, and Airbrush tools. For the other brush tools, only the intensity distribution of a brush is relevant.

Pressure Sensitivity The Pressure Sensitivity section is only meaningful if you are using a tablet: it allows you to decide which aspects of the tool’s action should be affected by how hard you press the stylus against the tablet. The possibilities are “opacity”, “hardness”, “rate”, “size”, and “color”. They work together: you can enable as many of them as you like. For each tool, only the ones that are meaningful are listed. Here is what they do:

Opacity The effect of this option is described above.

Hardness This option applies to brushes with fuzzy edges. If it is enabled, the harder you press, the darker the fuzzy parts of the brush will appear.

Rate This option applies to the Airbrush, Convolve tool, and Smudge tool, all of which have time-based effects. Pressing harder makes these tools act more rapidly.

Size This option applies to all of the pressure sensitive brush tools, but only if you are using a parametric brush, that is, a brush created using the Brush Editor. If the option is checked, and the brush is parametric, then pressing harder will increase the size of the area affected by the brush.

Color This option only applies to the painting tools: the Pencil, Paintbrush, and Airbrush; and only if you are using colors from a gradient. If these conditions are met, then pressing harder causes colors to be taken from higher in the gradient.

Fade Out This option causes each stroke to fade out over the specified distance. It is easiest to visual for painting tools, but applies to all of the brush tools. It is equivalent to gradually reducing the

opacity along the trajectory of the stroke. Note that, if you are using a tablet, this option does not change the effects of brush pressure.

Incremental The Incremental checkbox activates incremental mode for the tool. If it is deactivated, the maximum effect of a single stroke is determined by the opacity, and moving the brush repeatedly over the same spot will not increase the effect beyond this limit. If Incremental is active, each additional pass with the brush will increase the effect, but the opacity can't exceed the opacity set for the tool. This option is available for all brush tools except those that have a "rate" control, which automatically implies an incremental effect.

Hard Edge Activating this option causes fuzzy brushes to be treated as though they were black-and-white, and inactivates sub-pixel anti-aliasing. The consequence is that all pixels affected by the tool are affected to the same degree. This is often useful if you work at a very high zoom level, and want to have precise control of every single pixel.

"Hard edge" is available for all brush tools except the painting tools (Pencil, Paintbrush, and Airbrush), where it would be redundant, because giving a hard edge to the Paintbrush or Airbrush would simply make them behave like the Pencil tool.

8.3.1.3. Further Information

Advanced users may be interested to know that brush tools actually operate at a sub-pixel level, in order to avoid producing jagged-looking results. One consequence of this is that even if you work with a hard-edged brush, such as one of the Circle brushes, pixels on the edge of the brushstroke will only be partially affected. If you need to have all-or-nothing effects (which may be necessary for getting a good selection, or for cutting and pasting, or for operating pixel-by-pixel at a high zoom level), there are two things you can do: (1) for painting, use the Pencil tool, which makes all brushes perfectly hard and disables sub-pixel anti-aliasing, or (2) for other types of brush tools, check the "Hard edge" box in the Tool Options.

8.3.2. Bucket Fill

Figure 8.18. Toolbox Fill




This tool fills a selection with the current foreground color. If you Shift+click and use the Bucket tool, it will use the background color instead. Depending on how the tool options are set, the Bucket Fill tool will either fill the entire selection, or only parts whose colors are similar to the point you click on. The tool options also affect the way transparency is handled.

The amount of fill depends on what Fill Threshold you have specified. The fill threshold determines how far the fill will spread (similar to the way in which the magic wand works). The fill starts at the point where you click and spreads outward until the color or alpha value becomes "too different".

When you fill objects in a transparent layer (such as letters in a text layer) with a different color than before, you may find that a border of the old color still surrounds the objects. This is due to a low fill-threshold in the Bucket Fill options dialog. With a low threshold, the bucket tool won't fill semi-transparent pixels, and they will stand out against the fill because they have kept their original color. If

you want to fill areas that are totally transparent, you have to choose right-click|Select|Select All, and make sure that the layer's "Keep Transparency" button (in the Layers dialog) is unchecked. If the Keep Transparency button is checked, only the opaque parts of the layer will be filled, and if you don't use the Select All command, only the opaque "island" that you clicked on will be filled.

8.3.2.1. Activate Tool

- The Bucket Fill can be called in the following order, from the image-menu: **Tools / Paint Tools / Bucket Fill**.
- The Tool can also be called by clicking the tool icon: 


8.3.2.2. Key modifiers (Defaults)

Shortcut The **Shift-b** keys will change the active tool to Bucket Fill.

Ctrl toggles the use of BG Color Fill or FG Color Fill on the fly.

Shift toggles the use of Fill Similar Color or Fill Whole Selection on the fly.

8.3.2.3. Options

Overview The available tool options for the Fill Tool can be accessed by double clicking the Fill Tool icon. 

Opacity The Opacity slider sets the transparency level for the fill. A higher opacity setting results in a more opaque fill and a lower setting results in a more transparent fill.

Mode The Mode dropdown list provides a selection of paint application modes. A list of these modes can be found in the [Glossary](#).

Pattern This dropdown list allows the user to select one of many fill patterns to use on the next fill operation. The manner in which the list is presented is controlled by the four buttons at the bottom of the selector.

Fill Type GIMP provides three fill types: **FG Color Fill**, **BG Color Fill** and **Pattern Fill**.

FG Color Fill sets the fill color to the currently selected foreground color.

BG Color Fill sets the fill color to the currently selected background color.

Pattern Fill sets the fill color to the currently selected pattern.

Affected Area

Fill similar colors This is the default setting: the tool fills the area with a color near the pixel onto you have clicked. The color similarity is defined by a brightness threshold, that you can set by a value or by a cursor position.

Fill whole selection This option makes GIMP fill a preexistent selection or the whole image. A quicker approach to do the same thing could be to click and drag the foreground, background or pattern color, leaving it onto the selection.

Finding Similar Colors Under this section you can find two options:

The option **Fill Transparent Areas** offers the possibility of filling areas with low opacity.

The option **Sample Merged** toggles the sampling from all layers. If Sample Merged is active, fills can be made on a lower layer, while the color information used for threshold checking is located further up. Simply select the lower level and ensure that a layer above is visible for color weighting.

The Threshold slider sets the level at which color weights are measured for fill boundaries. A higher setting will fill more of a multi colored image and conversely, a lower setting will fill less area.

8.3.3. Gradient Tool

Figure 8.19. This tool fills the selected area with a gradient blend of the foreground and background colors by default



This tool fills the selected area with a gradient blend of the foreground and background colors by default, but there are many options. To make a blend, drag the cursor in the direction you want the gradient to go, and release the mouse button when you feel you have the right position and size of your blend. The softness of the blend depends on how far you drag the cursor. The shorter the drag distance, the sharper it will be.

There are an astonishing number of things you can do with this tool, and the possibilities may seem a bit overwhelming at first. The two most important options you have are the Gradient and the Shape. Clicking the Gradient button in the tool options brings up a Gradient Select window, allowing you to choose from among a variety of gradients supplied with GIMP; you can also construct and save custom gradients.


For Shape, there are 11 options: Linear, Bilinear, Radial, Square, Conical (symmetric), Conical (asymmetric), Shapeburst (angular), Shapeburst (spherical), Shapeburst (dimpled), Spiral (clockwise), and Spiral (counterclockwise); these are described in detail below. The Shapeburst options are the most interesting: they cause the gradient to follow the shape of the selection boundary, no matter how twisty it is. Unlike the other shapes, Shapeburst gradients are not affected by the length or direction of the line you draw: for them as well as every other type of gradient you are required to click inside the selection and move the mouse, but a Shapeburst appears the same no matter where you click or how you move.

TIP



Check out the Difference option in the Mode menu, where doing the same thing (even with full opacity) will result in fantastic swirling patterns, changing and adding every time you drag the cursor.

8.3.3.1. Activate Tool

- The Blend Tool can be called in the following order, from the image-menu: **Tools/ Paint Tools/ Blend**.
- The Tool can also be called by clicking the tool icon: 

8.3.3.2. Key modifiers (Defaults)

Shortcut The L key will change the active tool to Gradient Fill.

Ctrl Ctrl is used to create straight lines that are constrained to 15 degree absolute angles.

8.3.3.3. Options

Overview The available tool options can be accessed by double clicking the Gradient Tool icon. 

Opacity The Opacity slider sets the transparency level for the gradient. A higher opacity setting results in a more opaque fill and a lower setting results in a more transparent fill.

Mode The Mode dropdown list provides a selection of paint application modes. A list of these modes can be found in the [Glossary](#).

Gradient A variety of gradient patterns can be selected from the drop-down list. The tool causes a shading pattern that transitions from foreground to background color or introducing others colors, in the direction the user determines by drawing a line in the image. For the purposes of drawing the gradient, the **Reverse** checkbox reverse the gradient direction with the effect, for instance, of swapping the foreground and background colors.

Offset The **Offset** value permits to increase the "slope" of the gradient.

Shape The GIMP provides 11 shapes, which can be selected from the drop-down list. Details on each of the shapes are given below.



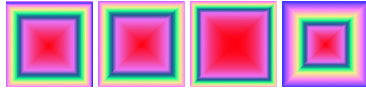
The **Linear** gradient begins with the foreground color at the starting point of the drawn line and transitions linearly to the background color at the ending point.



The **Bi-Linear** shape proceeds in both directions from the starting point, for a distance determined by the length of the drawn line. It is useful, for example, for giving the appearance of a cylinder.

**Radial**

The **Radial** gradient gives a circle, with foreground color at the center and background color outside the circle. It gives the appearance of a sphere without directional lighting.

**Square**

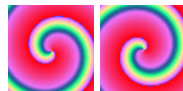
There are four shapes that are some variant on a square: **Square**, **Shapeburst (angular)**, **Shapeburst (spherical)**, and **Shapeburst (dimpled)**. They all put the foreground color at the center of a square, whose center is at the start of the drawn line, and whose half-diagonal is the length of the drawn line. The four options provide a variety in the manner in which the gradient is calculated; experimentation is the best means of seeing the differences.

**Conical (symmetric)**

The **Conical(symmetric)** shape gives the sensation of looking down at the tip of a cone, which appears to be illuminated with the background color from a direction determined by the direction of the drawn line.

**Conical (asymmetric)**

Conical(asymmetric) is similar to **Conical(symmetric)** except that the "cone" appears to have a ridge where the line is drawn.

**Spiral (clockwise)**

The **Spiral** tools provide spirals whose repeat width is determined by the length of the drawn line.

Repeat There are two repeat modes: **Sawtooth Wave** and **Triangular Wave**. The Sawtooth pattern is achieved by beginning with the foreground, transitioning to the background, then starting over with the foreground. The Triangular starts with the foreground, transitions to the background, then transitions back to the foreground.

Dithering Dithering is fully explained in the [Glossary](#)

Adaptive Supersampling **Adaptive Supersampling** is a more sophisticated means of smoothing the "jagged" effect of a sharp transition of color along a slanted or curved line.

8.3.4. Painting Tools (Pencil, Paintbrush, Airbrush)

The tools in this group are GIMP's basic painting tools, and they have enough features in common to be worth discussing together in this section. Features common to all brush tools are described in the [Common Features](#) section. Features specific to an individual tool are described in the section devoted to that tool.

The Pencil is the crudest of the tools in this group: it makes hard, non-anti-aliased brushstrokes. The Paintbrush is intermediate: it is probably the most commonly used of the group. The Airbrush is the most flexible and controllable: it is the only one for which the amount of paint applied depends on the

Figure 8.20. Painting example. Three strokes painted with the same round fuzzy brush (outline shown in upper left), using the Pencil (left), Paintbrush (middle), and Airbrush (right).



speed of brush movement. This flexibility also makes it a bit more difficult to use than the Paintbrush, however.

All of these tools share the same brushes, and the same options for choosing colors, either from the basic palette or from a gradient. All are capable of painting in a wide variety of modes.

8.3.4.1. Key modifiers

Ctrl Holding down the **Ctrl** key changes each of these tools to a **Color Picker**: clicking on any pixel of any layer sets the foreground color (as displayed in the Toolbox Color Area) to the color of the pixel.

8.3.4.2. Options

Mode The Mode dropdown list provides a selection of paint application modes. This setting appears in the Tool Options for all brush tools, but it is grayed out for all except the tools in this group, the Ink tool, and the Clone tool. A list of possible modes can be found in the **Glossary**. For the most part these modes are the same as the layer combination modes available in the Layers dialog, and you can understand their effects by imagining that the paint is applied to a separate layer above the target layer, with the mode for the layer set as specified. Three of the modes are special, though:

Color Erase. This mode erases the foreground color, replacing it with partial transparency. It acts like the **Color to Alpha** filter, applied to the area under the brushstroke. Note that this only works on layers that possess an alpha channel; otherwise, this mode is identical to Normal.

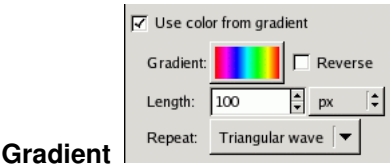
Behind. This mode applies paint only to non-opaque areas of the layer: the lower the opacity, the more paint is applied. Thus, painting opaque areas has no effect; painting transparent areas has the same effect as normal mode. The result is always an increase in opacity. Of course none of this is meaningful for layers that lack an alpha channel.

Figure 8.21. Dissolve mode example. Two brushstrokes made with the Airbrush, using the same fuzzy circular brush. Left: Normal mode. Right: Dissolve mode.



Dissolve. In this very useful mode, for fuzzy brushes the gray level of the brush determines not the paint density, but rather the probability of applying paint. This gives a nice way of creating rough-looking paintstrokes.

Figure 8.22. Gradient options for painting tools.



Instead of using the foreground color (as shown in the Color Area of the Toolbox), by checking the “Use color from gradient” option you can choose to paint with a gradient, giving colors that change gradually along the brush trajectory. For basic information on gradients, see the [Gradients](#) section.





You have several options to control what gradient is used and how it is laid out:

Gradient. Here you see a display of the current gradient. Clicking on it brings up a Gradient Selector, which will allow you to choose a different gradient.

Reverse. Normally a brushstroke starts with colors from the left side of the gradient, and progresses rightward. If “Reverse” is checked, the stroke starts with colors from the right side, and progresses leftward.

Length. This option sets the distance corresponding to one complete cycle through the gradient colors. The default units are pixels, but you can choose a different unit from the adjoining Units menu.

Table 8.1. Illustration of the effects of the three gradient-repeat options, for the “Abstract 2” gradient.

		
	Abstract2 Gradient	
		
None	Sawtooth	Triangular

Repeat. This option determines what happens if a brushstroke extends farther than the Length specified above. There are three possibilities: “None” means that the color from the end of the gradient will be used throughout the remainder of the stroke; “Sawtooth wave” means that the gradient will be restarted from the beginning, which will often produce a color discontinuity; “Triangular wave” means that the gradient will be traversed in reverse, afterwards bouncing back and forth until the end of the brushstroke.

8.3.5. Pencil

Figure 8.23. Pencil tool



The Pencil tool is used to draw free hand lines with a hard edge. The pencil and paintbrush are similar tools. The main difference between the two tools is that although both use the same type of brush, the pencil tool will not produce fuzzy edges, even with a very fuzzy brush. It does not even do anti-aliasing.


Why would you want to work with such a crude tool? Perhaps the most important usage is when working with very small images, such as icons, where you operate at a high zoom level and need to get every pixel exactly right. With the pencil tool, you can be confident that every pixel within the brush outline will be changed in exactly the way you expect.

TIP



If you want to draw straight lines with the Pencil (or any of several other paint tools), click at the starting point, then hold down **Shift** and click at the ending point.

8.3.5.1. Activate Tool

- The Pencil Tool can be called in the following order, from the image-menu: **Tools** → **Paint Tools** → **Pencil**
- The Tool can also be called by clicking the tool icon: 
- or by clicking on the N keyboard shortcut.

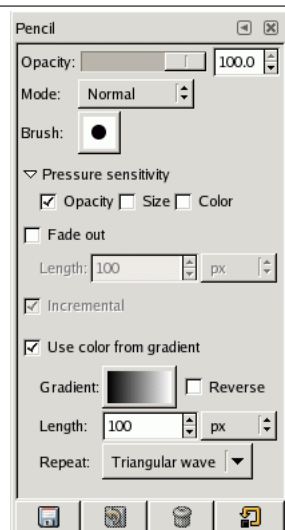
8.3.5.2. Key modifiers (Defaults)

Ctrl This key changes the pencil to a **Color Picker**.

Shift This key places the pencil tool into straight line mode. Holding **Shift** while clicking Button 1 will generate a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the last line.

8.3.5.3. Options


Figure 8.24. Pencil Tool options



NOTE



See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Overview The available tool options can be accessed by double clicking the Pencil Tool icon. 

Opacity The Opacity slider sets the transparency level for the paint. A higher opacity setting results in a more opaque fill and a lower setting results in a more transparent fill.

Mode The Mode dropdown list provides a selection of paint application modes. A list of these modes can be found in the [Glossary](#).

Brush Indicates the active brush. Clicking on the brush icon opens the brush selection dialog.

Gradient The dropdown list allows to select a gradient that will be used if the **Use Color from Gradient** option is checked. This gradient can be reversed by checking the **Reverse** option.

Incremental The Incremental checkbox activates incremental paint mode for the tool so that color opacity increases each time the pencil passes over the same place but can't exceed the original color opacity. More information about incremental mode can be found in the [glossary](#).

Pressure Sensitivity The Pressure Sensitivity section sets the sensitivity levels for input devices that support this option.

- **Opacity:** Drawing opacity increases with stylus pen pressure.
- **Size:** Drawing width increases with stylus pressure.
- **Color:** Gimp uses the active gradient colors in order as stylus pressure increases.

Fade Out This option sets the stroke to fade out after the specified distance. The stroke will fade to transparency at the completion of the set distance.

Use Color from Gradient Instead of using the Foreground or Background color, the color is based on the active gradient selection. By checking **Reverse** you can reverse the gradient direction.

The gradient is painted in a forward direction. The entire color sequence of the gradient will be rendered within the **Length** set.



Repeat  

Sawtooth Wave: Renders the gradient repeatedly. At each expiry of the distance that has been set, the gradient will begin rerendering from the beginning.

Triangular Wave: Renders the gradient repeatedly. At each expiry of the distance that has been set, the gradient will reverse direction and render in that direction until the expiry of the distance once more. At this point, it will begin again until the stroke is complete.




8.3.6. Paintbrush Tool

Figure 8.25. Paintbrush



The paintbrush tool paints fuzzy brush strokes. All strokes are rendered using the current brush.

8.3.6.1. Activate Tool

- You can call the Paintbrush Tool in the following order, from the image-menu: **Tools/ Paint Tools/ Paintbrush** .
- The Tool can also be called by clicking the tool icon: 
- or by using the **P** keyboard shortcut.

8.3.6.2. Key modifiers (Defaults)

Ctrl This key changes the paintbrush to a **Color Picker**.

Shift This key places the paintbrush into straight line mode. Holding **Shift** while clicking Button 1 will generate a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the last line.

8.3.6.3. Options

NOTE

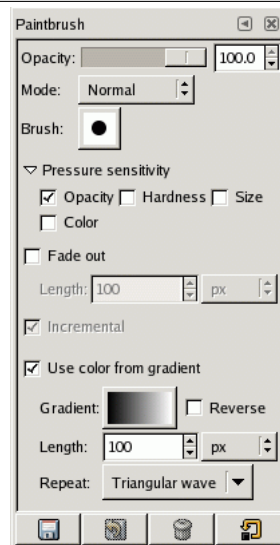


See the **Brush Tools Overview** for a description of tool options that apply to many or all brush tools.

Overview The available tool options can be accessed by double clicking the Paintbrush Tool icon. 

Opacity The Opacity slider sets the transparency level for the paint. A higher opacity setting results in a more opaque fill and a lower setting results in a more transparent fill.

Mode The Mode dropdown list provides a selection of paint application modes. A list of these modes can be found in the **Glossary**.

Figure 8.26. Paintbrush tool options

Brush Indicates the active brush. Clicking on the brush icon opens the brush selection dialog.

Gradient The dropdown list allows to select a gradient that will be used if the **Use Color from Gradient** option is checked. This gradient can be reversed by checking the **Reverse** option.

Incremental The Incremental checkbox activates incremental paint mode for the tool so that color opacity increases each time the brush passes over the same place but cannot exceed the original color opacity. More information about incremental mode can be found in the [glossary](#).

Pressure Sensitivity The Pressure Sensitivity section sets the sensitivity levels for input devices that support this option.

- **Opacity:** Drawing opacity increases with stylus pen pressure.
- **Hardness:** Drawing sharpness increases with stylus pressure.
- **Size:** Drawing width increases with stylus pressure.
- **Color:** Gimp uses the active gradient colors in order as stylus pressure increases.

Fade Out This option sets the stroke to fade out after the specified distance. The stroke will fade to transparency at the completion of the set distance.

Use Color from Gradient Instead of using the Foreground or Background color, the color is based on the active gradient selection.

The gradient is painted in a forward direction. The entire color sequence of the gradient will be rendered within the distance set.



Repeat



Sawtooth Wave : Renders the gradient repeatedly. At each expiry of the distance that has been set, the gradient will begin re-rendering from the beginning.

Triangular Wave : Renders the gradient repeatedly. At each expiry of the distance that has been set, the gradient will reverse direction and render in that direction until the expiry of the distance once more. At this point, it will begin again until the stroke is complete.



8.3.7. Eraser

Figure 8.27. Eraser tool icon in the Toolbox



The Eraser is used to remove areas of color from the current layer or from a selection of this layer. If the Eraser is used on something that does not support transparency (a selection mask channel, a layer mask, or the Background layer if it lacks an alpha channel), then erasing will show the background color, as displayed in the Color Area of the Toolbox (in case of a mask, the selection will be modified). Otherwise, erasing will produce either partial or full transparency, depending on the settings for the tool options.


If you need to erase some group of pixels completely, leaving no trace behind of their previous contents, you should check the “Hard edge” box in the Tool Options. Otherwise, sub-pixel brush placement will cause partial erasure at the edges of the brush-stroke, even if you use a hard-edged brush.

TIP



If you use GIMP with a tablet, you may find it convenient to treat the reverse end of the stylus as an eraser. To make this work, all you need to do is click the reverse end on the Eraser tool in the Toolbox. Because each end of the stylus is treated as a separate input device, and each input device has its own separate tool assignment, the reverse end will then continue to function as an Eraser as long as you don't select a different tool with it.

8.3.7.1. How to Activate

The Eraser can be activated from an image menu as **Tools** → **Paint Tools** → **Eraser**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **E**.

8.3.7.2. Key modifiers

See the [Brush Tools Overview](#) for a description of key modifiers that have the same effect on all brush tools.

- **Ctrl**: For the Eraser, holding down the Ctrl key puts it into “color picker” mode, so that it selects the color of any pixel it is clicked on. Unlike other brush tools, however, the Eraser sets the *background* color rather than the foreground color. This is more useful, because on drawables that don't support transparency, erasing replaces the erased areas with the current background color.

- **Alt:** For the Eraser, holding down the Alt key switches it into “anti-erase” mode, as described below in the Tool Options section. Note that on some systems, the Alt key is trapped by the Window Manager. If this happens to you, you may be able to use Shift-Alt instead.

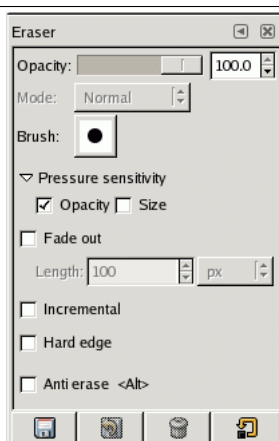
8.3.7.3. Tool Options

NOTE



See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Figure 8.28. Tool Options for the Eraser tool



See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools. The Eraser tool has only one special option (Anti-Erase), but the Opacity control is mentioned here as well because its name may be a bit confusing.

Opacity The “Opacity” slider, in spite of its name, determines the “strength” of the tool. Thus, when you erase on a layer with an alpha channel, the higher the “opacity” you use, the more transparency you get!

Anti Erase The Anti Erase option of the Erase tool can un-erase areas of an image, even if they are completely transparent. This feature only works when used on layers with an alpha channel. In addition to the checkbox in the Tool Options, it can also be activated on-the-fly by holding down the Alt key (or, if the Alt key is trapped by the Window Manager, by holding down both Shift and Alt).

NOTE


To understand how anti-erasing is possible, you should realize that erasing (or cutting, for that matter) only affects the alpha channel, not the RGB channels that contain the image data. Even if the result is completely transparent, the RGB data is still there, you simply can't see it. Anti-erasing increases the alpha value so that you can see the RGB data once again.

An annoying feature: on a layer you have created with a transparent background, using anti-erasing on non-painted areas paints with black!

8.3.8. Airbrush Tool

Figure 8.29. The Airbrush tool in Toolbox. The Airbrush tool emulates a traditional airbrush. This tool is suitable for painting soft areas of color.

**8.3.8.1. Activate Tool**

- The Airbrush Tool can be called from the image-menu: **Tools/ Paint Tools/ Airbrush .**
- The Tool can also be called by clicking the tool icon: 

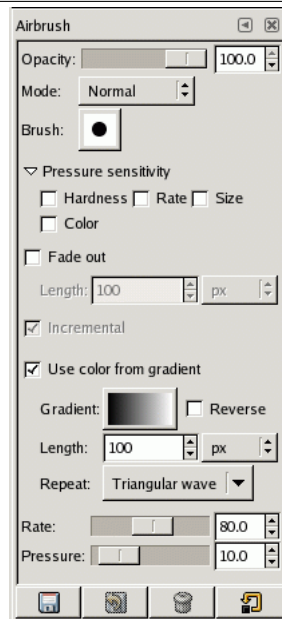
8.3.8.2. Key modifiers (Defaults)

Shortcut The **a** key, or **]** under GIMP-2.10, will change the active tool to Airbrush Tool.

Ctrl **Ctrl a** changes the airbrush to a **Color Picker**.

Shift **Shift** places the airbrush into straight line mode. Holding **Shift** while clicking Button 1 will generate a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the last line.

8.3.8.3. Options

Figure 8.30. Airbrush options**NOTE**

See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Overview The available tool options can be accessed by double-clicking the airbrush Tool icon. 

Opacity Opacity can be set in three ways: the slider bar, the spinner, and direct entry of the opacity percentage value. A higher opacity setting results in a more opaque fill and a lower setting results in a more transparent fill.

Mode The Mode dropdown list provides a selection of paint application modes. A list of these modes can be found in the [Glossary](#).

Brush Opens a brush selection list. Using the slider, one of many styles of brush can be selected. At the bottom of the brush selector are options for how the selections are displayed.

Gradient The airbrush has a gradient property, which can be controlled from this drop-down list, which is identical to the standard gradient selector. The direction of the gradient is reversible using the checkbox to the right of the gradient selector.

Pressure Sensitivity The Pressure Sensitivity section sets the sensitivity levels for input devices that support this option.

Fade Out This option sets the stroke to fade out after the specified distance. The stroke will fade to transparency at the completion of the set distance.

Use Color from Gradient With the checkbox activated, instead of using the foreground or background color drawing, the gradient colors are used. The gradient pattern may have repeat patterns, with selected cycle lengths.



The gradient is painted in a forward direction. The entire color sequence of the gradient will be rendered within the distance set.



Sawtooth Wave: Renders the gradient repeatedly. At each expiry of the distance that has been set, the gradient will begin rerendering from the beginning.



Triangular Wave: Renders the gradient repeatedly. At each expiry of the distance that has been set, the gradient will reverse direction and render in that direction until the expiry of the distance once more. At this point, it will begin again until the stroke is complete.

Rate The **Rate** slider adjusts the speed of color application that the airbrush paints. A higher setting will produce darker brush strokes in a shorter amount of time.

Pressure This slider controls the amount of color that the airbrush paints. A higher setting here will result in darker strokes.

8.3.9. Ink Tool

Figure 8.31. Toolbox Pen



The Ink tool uses a simulation of an ink pen with a controllable nib to paint solid brush strokes with an antialiased edge. The size, shape and angle of the nib can be set to determine how the strokes will be rendered.

8.3.9.1. Activate Tool

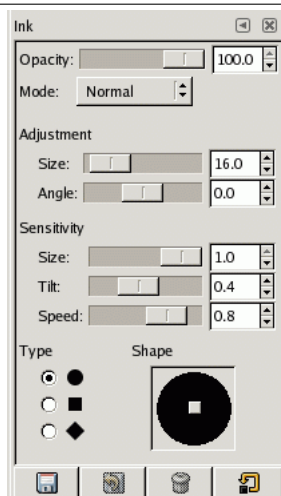
- You can call the Ink Tool in the following order, from the image-menu: **Tools/ Paint Tools/Ink** .
- You can also call this Tool by clicking on the tool icon:

8.3.9.2. Key modifiers (Defaults)

Shortcut The **k** key will change the active tool to Ink Tool.

8.3.9.3. Options

Figure 8.32. Ink Tool options



NOTE



See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Overview The available tool options can be accessed by double clicking the ink tool icon. 

Opacity The Opacity slider sets the transparency level for the ink. A higher opacity setting results in a more opaque fill and a lower setting results in a more transparent fill.

Mode The Mode dropdown list provides a selection of ink application modes. A list of these modes can be found in the glossary.

Adjustment

Size Controls the apparent width of the pen's nib with values that ranges from 0 (very thin) to 20 (very thick).

Angle This controls the apparent angle of the pen's nib relative to horizontal.

Sensitivity

Size This controls the size of the nib, from minimum to maximum. Note that a size of 0 does not result in a nib of size zero, but rather a nib of minimum size.

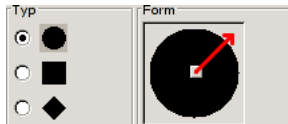
Tilt Controls the apparent tilt of the nib relative to horizontal. This control and the Angle control described above are interrelated. Experimentation is the best means of learning how to use them.

Speed This controls the effective size of the nib as a function of drawing speed. That is, as with a physical pen, the faster you draw, the narrower the line.

Type and Shape

Type There are three nib shapes to choose from: circle, diamond, and square.

Shape The geometry of the nib type can be adjusted by holding button 1 of the mouse on the small square at the center of the Shape icon and moving it around.



8.3.10. Clone Tool

Figure 8.33. Clone tool icon in the Toolbox




The Clone tool uses the current brush to copy from an image or pattern. It has many uses: one of the most important is to repair problem areas in digital photos, by “painting over” them with pixel data from other areas. This technique takes a while to learn, but in the hands of a skilled user it is very powerful. Another important use is to draw patterned lines or curves: see [Patterns](#) for examples.

If you want to clone from an image, instead of a pattern, you must tell GIMP which image you want to copy from. You do this by holding down the Ctrl key and clicking in the desired source image. Until you have set the source in this way, you will not be able to paint with the Clone tool: the tool cursor tells you this by showing a “forbidden” symbol.

If you clone from a pattern, the pattern is *tiled*; that is, when the point you are copying from moves past one of the edges, it jumps to the opposite edge and continues, as though the pattern were repeated side-by-side, indefinitely. When you clone from an image this does not happen: if you go beyond the edges of the source, the Clone tool stops producing any changes.

You can clone from any drawable (that is, any layer, layer mask, or channel) to any other drawable. You can even clone to or from the selection mask, by switching to QuickMask mode. If this means copying colors that the target does not support (for example, cloning from an RGB layer to an Indexed layer or a layer mask), then the colors will be converted to the closest possible approximations.

8.3.10.1. How to Activate

The Clone tool can be activated from an image menu as **Tools** → **Paint Tools** → **Clone**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **C**, or **S** under GIMP-2.10.

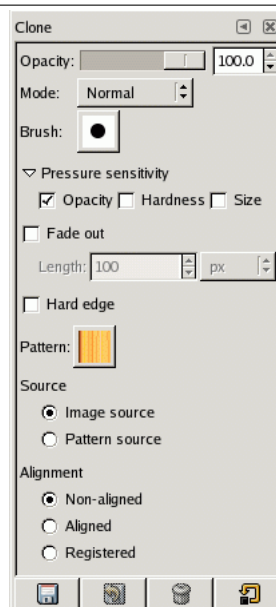
8.3.10.2. Key modifiers

See the [Brush Tools Overview](#) for a description of key modifiers that have the same effect on all brush tools.

Ctrl The Ctrl key is used to select the source, if you are cloning from an image: it has no effect if you are cloning from a pattern. You can clone from any layer of any image, by clicking on the image display, with the Ctrl key held down, while the layer is active (as shown in the Layers dialog). If the Alignment is set to "Non-aligned" or "Aligned" in the Tool Options, then the point you click on becomes the origin for cloning: the image data at that point will be used when you first begin painting with the Clone tool. In source-selection mode, the cursor changes to a crosshair-symbol.

8.3.10.3. Tool Options

Figure 8.34. Tool Options for the Clone tool



NOTE

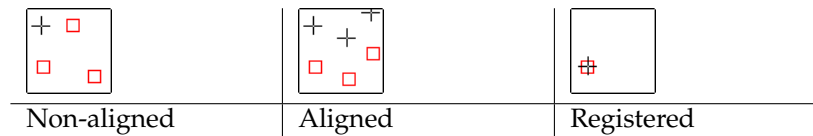


See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Pattern Clicking on the pattern symbol brings up the Patterns dialog, which you can use to select the pattern to paint with. This option is only relevant if you are cloning from a Pattern source.

Source The choice you make here determines whether data will be copied from the pattern shown above, or from one of the images you have open. If you choose "Image source", you must tell GIMP which layer to use as the source, by Ctrl-clicking on it, before you can paint with the tool.

Alignment The Alignment mode sets how the source position is offset from each brush stroke.



Above: schematic illustration of the three possible alignment modes. The mouse cursor is shown as a red rectangle, and the source point as a black crosshair.

- **Non-aligned.** In this mode, each brushstroke is treated separately. For each stroke, the point where you first click is copied from the source origin; there is no relationship between one brush stroke and another. In non-aligned mode, different brush strokes will usually clash if they intersect each other.
- **Aligned.** In this mode, the first click you make when painting sets the offset between the source origin and the cloned result, and all subsequent brushstrokes use the same offset. Thus, you can use as many brushstrokes as you like, and they will all mesh smoothly with one another.
If you want to change the offset, you can do this by switching to non-aligned mode, painting one stroke, then switching back to aligned mode. Subsequent strokes will use the same offset as the first stroke.
- **Registered.** This mode copies each pixel in the source to the pixel with the same offset in the target. It is most commonly useful when you want to clone from one layer to another layer within the same image. It is also useful when cloning from a pattern, if you want the left or upper edges of the pattern to line up precisely with the corresponding edges of the target layer.

8.3.10.4. Further Information

Transparency The effects of the Clone tool on transparency are a bit complicated. You cannot clone transparency: if you try to clone from a transparent source, nothing happens to the target. If you clone from a partially transparent source, the effect is weighted by the opacity of the source. So, assuming 100% opacity and a hard brush:

- Cloning translucent black onto white produces gray.
- Cloning translucent black onto black produces black.
- Cloning translucent white onto white produces white.
- Cloning translucent white onto black produces gray.

Cloning can never increase transparency, but, unless "keep transparency" is turned on for the layer, it can reduce it. Cloning an opaque area onto a translucent area produces an opaque result; cloning a translucent area onto another translucent area causes an increase in opacity.

"Filter" brushes There are a few non-obvious ways to use the Clone tool to obtain powerful effects. One thing you can do is to create "Filter brushes", that is, create the effect of applying a filter with a brush. To do this, duplicate the layer you want to work on, and apply the filter to the copy. Then activate the Clone tool, setting Source to "Image source" and Alignment to "Registered". Ctrl-click on the filtered layer to set it as the source, and paint on the original layer: you will then in effect be painting the filtered image data onto the original layer.

History brush You can use a similar approach to imitate Photoshop's "History brush", which allows you to selectively undo or redo changes using a brush. To do this, start by duplicating the image; then, in the original, go back to the desired state in the image's history, either by undoing or by using the Undo History dialog. (This must be done in the original, not the copy, because duplicating an image does not duplicate the Undo history.) Now activate the Clone tool, setting Source to "Image source" and Alignment to "Registered". Ctrl-click on a layer from one image, and paint on the corresponding layer from the other image. Depending on how you do it, this gives you either an "undo brush" or a "redo brush".

8.3.11. Convolve (Blur/Sharpen)

Figure 8.35. Convolve tool icon in the Toolbox



The Convolve tool uses the current brush to locally blur or sharpen your image. Blurring with it can be useful if some element of your image stands out too much, and you would like to soften it. If you want to blur a whole layer, or a large part of one, you will probably be better off using one of the [Blur Filters](#). The direction of a brushstroke has no effect: if you want directional blurring, use the Smudge tool.

In “Sharpen” mode, the tool works by increasing the contrast where the brush is applied. A little bit of this may be useful, but overapplication will produce noise. Some of the [Enhancement Filters](#), particularly the [Unsharp Mask](#), do a much cleaner job of sharpening areas of a layer.

TIP



You can create a more sophisticated sharpening brush using the Clone tool. To do this, start by duplicating the layer you want to work on, and run a sharpening filter, such as Unsharp Mask, on the copy. Then activate the Clone tool, and in its Tool Options set Source to “Image source” and Alignment to “Registered”. Set the Opacity to a modest value, such as 10. Then Ctrl-click on the copy to make it the source image. If you now paint on the original layer, you will mix together, where the brush is applied, the sharpened version with the unsharpened version.

Both blurring and sharpening work incrementally: moving the brush repeatedly over an area will increase the effect with each additional pass. The Rate control allows you to determine how quickly the modifications accumulate. The Opacity control, however, can be used to limit the amount of blurring that can be produced by a single brushstroke, regardless of how many passes are made with it.

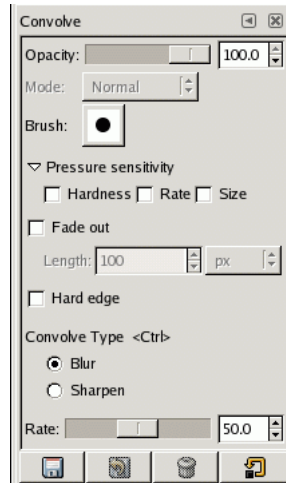
8.3.11.1. How to Activate

The Convolve tool can be activated from an image menu as **Tools** → **Paint Tools** → **Convolve**; from the Toolbox by clicking on the tool icon ; or from the keyboard using the shortcut **V**.

8.3.11.2. Key modifiers

See the [Brush Tools Overview](#) for a description of key modifiers that have the same effect on all brush tools.

- **Ctrl**: Holding down the Ctrl key toggles between Blur and Sharpen modes; it reverses the setting shown in the Tool Options.

Figure 8.36. Tool Options for the Convolve tool

8.3.11.3. Tool Options

NOTE



See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Convolve Type *Blur* mode causes each pixel affected by the brush to be blended with neighboring pixels, thereby increasing the similarity of pixels inside the brushstroke area. *Sharpen* mode causes each pixel to become more different from its neighbors than it previously was: it increases contrast inside the brushstroke area. Whatever setting you choose here, you can reverse it on-the-fly by holding down the Ctrl key.


Rate The **Rate** slider sets the strength of the convolve effect.

8.3.12. Dodge or Burn

Figure 8.37. Dodge tool

The Dodge or Burn tool uses the current brush to lighten or darken the colors in your image. The mode will determine which type of pixels are affected.

8.3.12.1. Activate Tool

- The Dodge or Burn Tool can be called in the following order, from the image-menu: **Tools/ Paint Tools/DodgeBurn** .
- The Tool can also be called by clicking the tool icon: 

8.3.12.2. Key modifiers (Defaults)

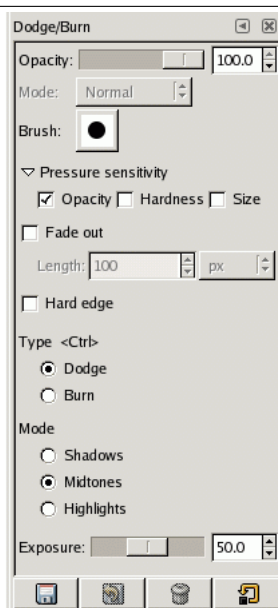
Shortcut The key combination **Ctrl-D** will change the active tool to Dodge or Burn tool.

Ctrl Toggle between dodge or burn types. The type will remain switched until **Ctrl** is released.

Shift **Shift** places the Dodge or Burn tool into straight line mode. Holding Shift while clicking Button1 will Dodge or Burn in a straight line. Consecutive clicks will continue Dodge or Burn in straight lines that originate from the end of the last line.

8.3.12.3. Options


Figure 8.38. “Dodge/Burn” tool options



NOTE



See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Overview The available tool options for the Dodge or Burn Tool can be accessed by double clicking the Dodge or Burn Tool icon. 

Opacity The Opacity slider sets the transparency level for the operation. A higher opacity setting results in a more opaque render and a lower setting results in a more transparent one.

Brush Indicates the active brush. Clicking on the brush icon opens the brush selection dialog.

Hard Edge If this option is toggled on, the tool behaves like the Pencil tool, in the sense that there is no anti-aliasing, and pixels are affected in an all-or-nothing way, even if it is being used with a soft brush.

Pressure Sensitivity The Pressure Sensitivity section sets whether hardness, opacity, or size will be affected by pressure for input devices that support this option.

Fade Out This option causes a transition to the background over a distance set by the **Length** field, visible only if the field is enabled.

Type The dodge effect lightens colors.

The burn effect darkens colors.

Mode There are three modes:

- **Shadows** restricts the effect to darkest pixels.
- **Midtones** restricts the effect to pixels of average tone.
- **Highlights** restricts the effect to lightest pixels.

Exposure Exposure defines how much the tool effect will be strong, as a more or less exposed photograph. Default slider is 50 but can vary from 0 to 100.

8.3.13. Smudge Tool

Figure 8.39. Smudge tool



The Smudge tool uses the current brush to smudge colors on the active layer or a selection. It takes color in passing and uses it to mix it to the next colors it meets, on a distance you can set.

8.3.13.1. Activate Tool

- The Smudge Tool can be called in the following order, from the image-menu: **Tools** → **Paint Tools** → **Smudge**.



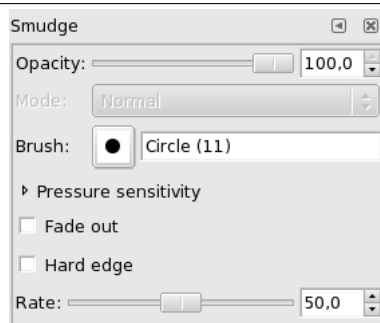
- The Tool can also be called by clicking the tool icon:
- or by pressing the **S** key on keyboard.

8.3.13.2. Key modifiers (Defaults)

Shift The **Shift** key places the smudge tool into straight line mode. Holding Shift while clicking Button1 will smudge in a straight line. Consecutive clicks will continue smudging in straight lines that originate from the end of the last line.

8.3.13.3. Options

Figure 8.40. The Smudge tool in Toolbox



NOTE



See the [Brush Tools Overview](#) for a description of tool options that apply to many or all brush tools.

Overview The available tool options for the Smudge Tool can be accessed by double clicking the Smudge



Tool icon.

Opacity The Opacity slider sets the transparency level for the paint. A higher opacity setting results in a more opaque fill and a lower setting results in a more transparent fill.

Brush Indicates the active brush. Clicking on the brush icon opens the brush selection dialog.

Hard Edge By default the smudge tool softens the edges of an area smudged. The **Hard Edge** toggle changes this behavior. Any area smudged while this option is active will be smudged with no softening of the edge of the brush used.

Pressure Sensitivity The Pressure Sensitivity section sets the sensitivity levels for input devices that support this option.

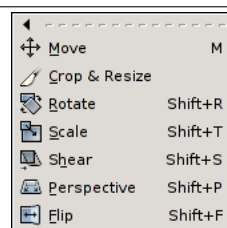
Fade Out This option sets the stroke to fade out after the specified distance. The stroke will fade to transparency at the completion of the set distance.

Rate The rate slider sets the strength of the smudge effect.

8.4. Transform Tools

8.4.1. Common Features

Figure 8.41. An overview of the transform tools



Inside the Transformation tool dialog, you will find seven tools to modify the presentation of the image or the presentation of an element of the image, selection, layer or path. Each transform tool has an Option dialog and an Information dialog to set parameters.


8.4.2. Move Tool

Figure 8.42. The Move tool in Toolbox



The Move Tool is used to move layers, selections or guides. It works also on texts.

8.4.2.1. Activate Tool

- The Move Tool can be called in the following order, from the image-menu: **Tools** → **Transform Tools** → **Move**
- The Tool can also be called by clicking the tool icon:  or by the **M** keyboard shortcut.

- The Move tool is automatically activated when you create a guide.

NOTE



Holding down the **space** bar changes the active tool to Move temporarily. The Move tool remains active as long as the space bar is held down. The original tool is reactivated after releasing the space bar.

8.4.2.2. Default behaviour

By default, this tool works on the active layer and the **Select a Layer or a Guide** option is checked. Let's suppose that your image has more than one layer, a selection and a guide. The mouse pointer takes the shape of the familiar 4-way arrow when it passes over the image elements originating from the active layer; then, click-and-drag will move the active layer. When the mouse pointer is on an image element originating from a non-active layer or on a guide, it looks like a small hand; then, click-and-drag will move this layer or this guide.

To move a selection frame, without moving its content, Use the **Ctrl+Alt** key-combination. This has the same action as selecting "Selection" in **Affect**.

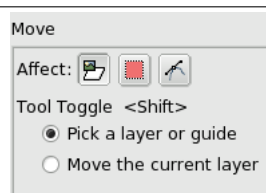
8.4.2.3. Key modifiers (Defaults)


Alt Holding **Alt** selections can be moved without altering your image. Only the frame is moved, not its content. If **Alt** doesn't work try **Shift+Alt**.

Using Arrow Keys Instead of using the mouse you can use arrow keys to move the active layer by one pixel. By pressing **Shift** you move by 25 pixels. This doesn't work with selections.

8.4.2.4. Options

Figure 8.43. Move Tool options



Overview The available tool options for Move can be found by double clicking the Move Tool icon. 

Affect Three buttons allow to choose which entity Move tool will act on: Layer, Selection or Path. Options to **Tool toggle** are somewhat different.

WARNING



Keep in mind that your **Affect** choice persists after quitting the tool.

- **Layer:** When this option is selected, you can choose, either by clicking on a radio-button or by pressing **Shift** key, between:

Pick a Layer or Guide to move: If your image has several layers, they must be visible and have at least a few non-transparent pixels so that you can find them (only the active layer has a dotted border). The mouse pointer turns to a small hand you can use to click on a part of the image that has been created in the layer you want to pick. You must click first on a non-transparent pixel to active the layer and move it.

The Move tool is used also to move guides. See glossary for **Guides**.

To place guides precisely think of **Measure** tool.

Move the Active Layer, i.e the layer with a dotted border in the image and highlighted in the Layer Dialog.

- **Selection:** one possibility only in this case: Move the selection. Boundaries are moved, not the content.
- **Path:** possibilities are the same as for layers: *Pick the path to move* and *Move the active path*.

8.4.3. Crop and Resize Tool

Figure 8.44. Crop tool



The Crop Tool is used to crop or clip an image or layer. This tool is often used to remove borders, or to eliminate unwanted areas to provide you with a more focused working area. It is also useful if you need a specific image size that does not match the original dimensions of your image.

To use the tool, click inside the image and drag out a rectangular region before releasing the mouse button. When you click, a dialog pops up showing you the dimensions of the crop region, and allowing you to perform various actions. If you want to alter the crop region, you can do so either by clicking and dragging on the corners, or by changing the values in the dialog. When you are ready, you can complete the operation either by clicking inside the crop region, or by pressing the Crop or Resize buttons on the dialog. (See below for what these mean.)


TIP



If you find that the dialog gets in your way more than it helps you, you can prevent it from appearing by holding down the **Shift** key when you first click on the image. Working this way means altering the crop region by dragging the corners, and executing the operation by clicking inside the image.

8.4.3.1. Activate Tool

- The Crop Tool can be called way the following way, from the image-menu: **Tools** → **Transform Tools** → **Crop and Resize**.

- The Tool can also be called by clicking the tool icon: 

TIP

A different and quicker way to crop selections is using the **Image** → **Crop Image** function in the Image menu.

8.4.3.2. Key modifiers (Defaults)

Shortcut The **Shift-C** shortcut will change the active tool to the Crop Tool.

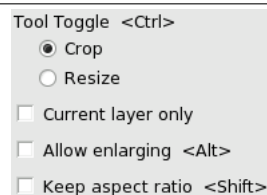
Ctrl Holding **Ctrl** will switch the Crop Tool mode between Crop and Resize.

Shift Holding **Shift** will toggle the of Fixed Aspect ratio.

Alt Holding **Alt** will toggle the use of Allow Enlarging.

8.4.3.3. Options

Figure 8.45. “Crop and Resize” tool options



Overview The available tool options for Crop can be accessed by double clicking the Crop tool icon.



Tool Toggle The Tool Toggle for the Crop Tool alternates between **Crop mode** and **Resize mode**.

Crop Mode is the standard mode of operation for the Crop Tool. Cropping an image or layer will change a layer by eliminating everything outside the cropping area. The cropping area can be set by either dragging the tool to form a rectangle area or manually setting the origin, width, and height. Cropping areas can also be set based on an existing selection or by using the Auto Shrink button. These options are available within the Crop And Resize Information dialog which is shown when the Crop Tool is clicked on an image or layer.

If you are cropping an image (not just a layer), then Resize Mode changes the shape of the image without altering the size or shape of the layers it contains. This may leave parts of some layers extending beyond the edges of the image, where you cannot see them, but if you move the layers, you will see that the contents still exist. If you are cropping a layer, Resize Mode does the same thing as crop mode.

NOTE

You can also switch to Resize mode in two other ways: first, by using the Resize button on the dialog instead of the Crop button; second, by holding down the **Ctrl** key while you click inside the crop region to complete the operation.

Current Layer Only This option will make the crop or resize affect only the active layer.

Allow Enlarging This option allows the crop or resize to take place outside the image or layer boundary.

Fixed Aspect Ratio With this option, cropping will respect a fixed ratio between Width and Height.

CROP AND RESIZE INFORMATION

Origin The Origin selectors allow the manual setting of the top left corner of the cropping region. The units may also be chosen.

Width/Height The Width and Height selectors allow the manual setting of both the width and the height of the cropping area. The units may also be chosen.

From Selection This button will resize the cropping area to encompass all active selections contained within the image. If there is no selection, the cropping area is the whole image.

Auto Shrink The Auto Shrink button will attempt to locate a border from which to draw dimensions from. This option only works well with isolated objects contrasting sharply with background.

Crop and Resize buttons These two buttons act according to their function, ignoring the mode setting in tool options.

8.4.4. Rotate Tool


Figure 8.46. The Rotate tool in Toolbox



8.4.4.1. Overview

This tool is used to rotate the active layer, a selection or a path. When you click on the image or the selection with this tool, a grid or an outline is superimposed and a *Rotation Information* dialog is opened. There, you can set the rotation axis, marked with a point, and the rotation angle. You can do the same by dragging the mouse pointer on the image or the rotation point.

8.4.4.2. Activate Tool

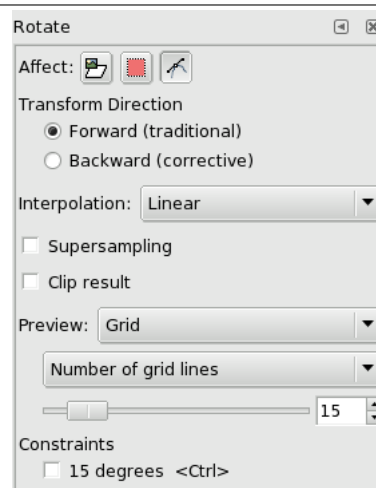
- You can call the Rotate tool in the following order, from the image-menu: **Tools** → **Transform Tools** → **Rotate**
- The Tool can also be called by clicking the tool icon:  in the Toolbox.
- or by using the **Shift-R** key combination.

8.4.4.3. Key modifiers (Defaults)

Ctrl Holding **Ctrl** will constrain the rotation angles to those only evenly divisible by 15 degrees.

OPTIONS

Figure 8.47. Rotation tool options



Overview The available tool options for the Rotate Tool can be accessed by double clicking the Rotate Tool icon. 

Affect The Rotate tool can affect the Layer (the selection content or the whole layer if no selection), the Selection boundaries, and the Path differently. These three buttons associate the remainder of the options to one of those three elements.

WARNING



Remind that the Affect option persists when you quit the tool.

Transform Direction The Transform Direction sets which way or direction a layer is rotated. The Traditional mode will rotate the layer as one might expect. If a layer is rotated 10 degrees to the right, then the layer will be rendered as such. This behaviour is contrary to Corrective rotation.

Corrective Rotation is primarily used to repair scanned images that are not straight. If the image is 13 degrees askew then you need not try to rotate by that angle. By using Corrective Rotation you can rotate visually and line up the layer with the image. Because the transformation is reversed, or performed backwards, the image will be rotated with sufficient angle to correct the error.

Interpolation The **Interpolation** drop-down list allows you to choose the quality of the transformation. For more information about the different methods that can be employed, see the glossary entry [Interpolation](#).

Supersampling See glossary for [Supersampling](#)

Clip Result This option will clip the transformed image to the original image size.

Preview Here, Preview is superimposed on the image. The drop-down list gives you four possibilities:

- 1 **Outline:** Puts a frame to mark the image outline, with a handle on each corner. Movements will affect this frame only on the Preview, but the result of the transformation will concern either the content or the boundaries of the selection according to the selected Affect mode.
- 2 **Grid:** Puts a grid on the image, with four handles. Movements will affect this grid only on the Preview, but the result of the transformation will concern either the content or the boundaries of the selection according to the selected Affect mode.
- 3 **Image:** Here, the preview is a copy of the image superimposed on the image, with an outline. Movements affect this copy and the underlying image appears.
- 4 **Grid+Image:** Both turn at the same time.

Preview is only for greater convenience. Whatever your choice, result will be the same when you clic on the *Rotate* button in the Rotate Informations dialog.

Options with grid activate a drop-list with two options: **Number of Grid Lines** will allow control over the total number of displayed grid lines. Use the slider to set the number of grid lines. **Grid Line Spacing** allows control over the distance between the grid lines. Use the slider to set the distance.

NOTE

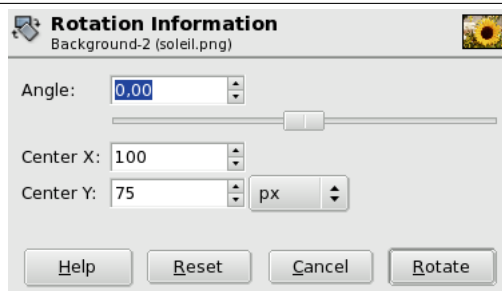


When rotating a path, Preview options are not valid: only Outline is active.

Constraints 15 Degrees will constrain the rotation to angles divisible by 15 degrees.

THE ROTATION INFORMATION WINDOW

Angle Here you can set the rotation angle, from -180° to +180°, i.e 360°.

Figure 8.48. The Rotation Information dialog window

Center X/Y This option allows you to set the position of the rotation center, represented by a large point in the image. A click-and-drag on this point also allows you to move this center. Default unit of measurement is pixel, but you can change it by using the drop-down list.

8.4.5. Scale Tool


Figure 8.49. The Scale tool in Toolbox

8.4.5.1. Overview

The Scale Tool is used to scale layers, selections or paths (the Object).

When you click on image with the tool the Scaling Information dialog box is opened, allowing to change separately **Width** and **Height**. At the same time a Preview with a grid or an outline is superimposed on the object and handles appear on corners that you can click and drag to change these dimensions. A small circle appears at center of the Preview allowing to move this preview.

8.4.5.2. Activate Tool

- The Scale Tool can be called in the following order, from the image-menu: **Tools** → **Transform Tools** → **Scale**
- The Tool can also be called by clicking the tool icon: 
- or by using the **Shift-T** key combination.

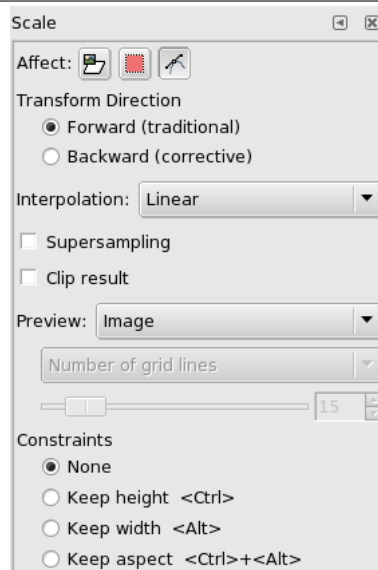
8.4.5.3. Key modifiers (Defaults)

Ctrl Holding **Ctrl** will constrain the scale height.

Alt Holding **Alt** will constrain the scalewidth. If Alt doesn't work, try **Shift+Alt**.

8.4.5.4. Options

Figure 8.50. Scale tool options



Overview The available tool options for the Scale Tool can be accessed by double clicking the Scale Tool icon. 

Affect Affect icons let you choose the element, current layer, selection or path, the tool will transform:

- The **Transform layer** lets you modify the size of the selection and its *content* (the whole layer if there is no selection).
- The **Transform selection** lets you modify the size of the selection *boundaries*.
- The **Transform path** lets you modify the size of the current path.

These three buttons associate the remainder of the options to one of those three elements.

WARNING



Remember that the Affect option persists when you quit the tool.

Transform Direction Forward (Traditional): The Forward mode will scale the object as one might expect: with an enlarged preview, the object will be rendered enlarged.

Backward (Corrective): Performs transformation in the reverse direction: a reduced object will be rendered enlarged and conversely.

Interpolation The **Interpolation** drop-down list allows you to choose the quality of the transformation. For more information about the different methods that can be employed, see the glossary entry [Interpolation](#).

Supersampling See glossary at [Supersampling](#).

Clip Result This option will clip the transformed image to the original image size.

Preview Here, Preview is superimposed on the image. The drop-down list gives you four possibilities:

- 1 **Outline**: Puts a frame to mark the image outline, with a handle on each corner. Movements will affect this frame only.
- 2 **Grid**: Puts a grid on the image, with four handles. Movements will affect this grid only.
- 3 **Image**: Here, the preview is a copy of the image superimposed on the image, with an outline. Movements affect this copy and the underlying image appears.
- 4 **Grid+Image**: Both turn at the same time.

Preview type is only for greater convenience. Whatever your choice, result will be the same when you clic on the *Scale* button in the Scale Informations dialog.

Options with grid activate a drop-list with two options: **Number of Grid Lines** will allow control over the total number of displayed grid lines. Use the slider to set the number of grid lines. **Grid Line Spacing** allows control over the distance between the grid lines. Use the slider to set the distance.

NOTE



When scaling a path, Preview options are not valid: only Outline is active.

Constraints None: No Height/Width constraint will be imposed to scaling.

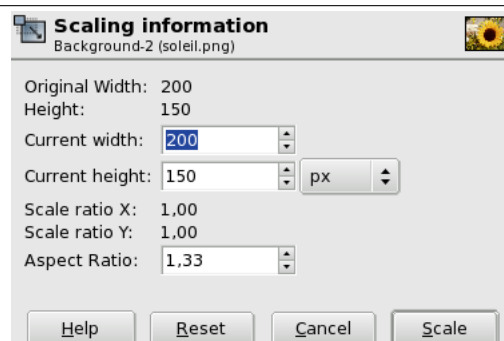
Keep Height will constrain the scale such that the height of the layer will remain constant.

Keep Width will constrain the scale such that the width of the layer will remain constant.

Keep Aspect will constrain the scale such as the Height/Width ratio of the layer will remain constant.

THE SCALING INFORMATION DIALOG WINDOW

Figure 8.51. The Scaling Information dialog window



Original Width/Height Here, the width and height of the original object are displayed.

Actual Width/Height Here, you can set width and Height you want to give to the object. The default unit of measurement is pixel. You can change it by using the drop-down list.

Scale ratio X/Y The origine/actual width/height ratios are displayed here.

Aspect ratio The actual width/height ratio is displayed here.


8.4.6. Shear Tool

Figure 8.52. The Shear tool in Toolbox




Shear tool is used to shift one part of an image, a layer, a selection or a path to a direction and the other part to the opposite direction. For instance, a horizontal shearing will shift the upper part to the right and the lower part to the left. A rectangle becomes a diamond. This is not a rotation: the image is distorted. To use this tool after selecting, click on the image or the selection: a grid is surperimposed and the Shearing Information dialog is opened. By dragging the mouse pointer on the image you distort the image, horizontally or vertically according to the the direction given to the pointer. When you are satisfied, click on the **Shear** button in the info dialog to validate.

8.4.6.1. Activate Tool

- The Shear Tool can be called in the following order, from the image-menu: **Tools** → **Transform Tools** → **Shear**
- The Tool can also be called by clicking the tool icon: 
- or by using the **Shift-S** key combination.

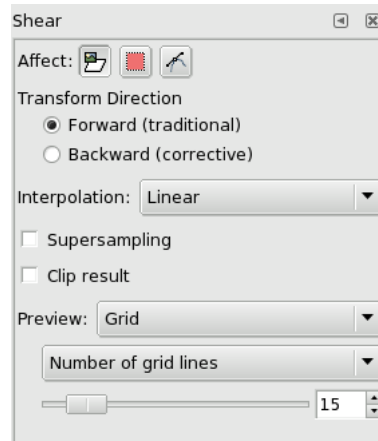
8.4.6.2. Options

Overview The available tool options for the Shear Tool can be accessed by double clicking the Shear Tool icon. 

Affect The shear can affect the Layer (the selection content), the Selection boundaries, and the current Path differently. These three buttons associate the remainder of the options to one of those three elements. Remember that your choice persists after quitting the tool.

Transform Direction Forward (Traditional): performs transformation in preview moving direction.

Backward (Corrective): performs transformation in reverse preview moving direction.

Figure 8.53. Shear tool options

Interpolation The **Interpolation** drop-down list allows you to choose the quality of the transformation. For more information about the different methods that can be employed, see the glossary entry [Interpolation](#).

Supersampling See glossary for [Supersampling](#)

Clip Result This option will clip the transformed image to the original image size.

Preview Here, Preview is superimposed on the image. The drop-down list gives you four possibilities:

- 1 **Outline:** Puts a frame to mark the image outline, with a handle on each corner. Movements will affect this frame only on the Preview, but the result of the transformation will concern either the content or the boundaries of the selection according to the selected Affect mode.
- 2 **Grid:** Puts a grid on the image, with four handles. Movements will affect this grid only on the Preview, but the result of the transformation will concern either the content or the boundaries of the selection according to the selected Affect mode.
- 3 **Image:** Here, the preview is a copy of the image superimposed on the image, with an outline. Movements affect this copy and the underlying image appears.
- 4 **Grid+Image:** Both turn at the same time.

Preview type is only for greater convenience. Whatever your choice, result will be the same when you clic on the *Shear* button in the Shear information dialog.

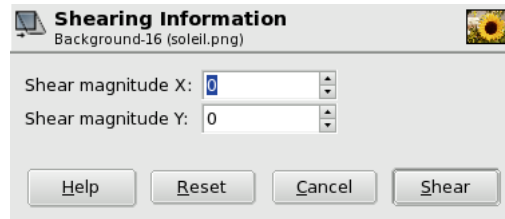
Options with grid activate a drop-list with two options: **Number of Grid Lines** will allow control over the total number of displayed grid lines. Use the slider to set the number of grid lines. **Grid Line Spacing** allows control over the distance between the grid lines. Use the slider to set the distance.

NOTE



When shearing a path, Preview options are not valid: only Outline is active.

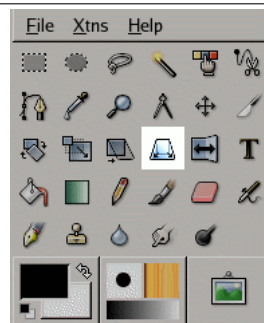
SHEARING INFORMATION

Figure 8.54. Shearing Information window

Shear magnitude X Here, you can set the horizontal shearing amplitude. A positive value produces a clock-wise tilt. A negative value gives a counter-clock-wise tilt.


Shear magnitude Y As above, in the vertical direction.

8.4.7. Perspective Tool

Figure 8.55. Perspective tool

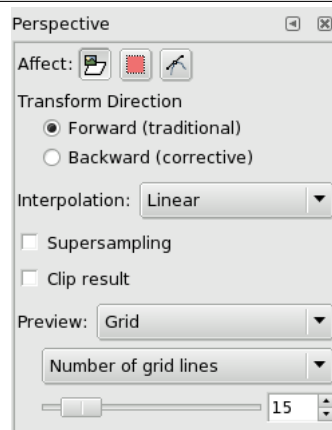
The Perspective Tool is used to change the perspective of the active layer content, of the selection boundaries or of a path. When you click on the image, according to the Preview type you have selected, a rectangular frame or a grid pops up around the selection (or around the whole layer if there is no selection), with a handle on each of the four corners. By moving these handles by click-and-drag, you can modify the perspective. At the same time, a “Transformation informations” pop up, which lets you valid the transformation. At the center of the element, a point lets you move the element by click-and-drag.

8.4.7.1. Activate Tool


- The Perspective Tool can be called in the following order, from the image-menu: **Tools/ Transform Tools/ Perspective**.
- The Tool can also be called by clicking the tool icon: 

8.4.7.2. Key modifiers (Defaults)

Shortcut The **Shift-p** key combination will change the active tool to Perspective.

Figure 8.56. “Perspective” tool options

8.4.7.3. Options

Overview The available tool options for the Perspective Tool can be accessed by double clicking the Perspective Tool icon. 

Affect Affect icons let you choose the element, current layer, selection or path, the tool will transform:

- The **Transform layer** lets you modify the perspective of the selection *content* (the whole layer if there is no selection).
- The **Transform selection** lets you modify the perspective of the selection *boundaries*.
- The **Transform path** lets you modify the perspective of the current path.

WARNING



Remember that your Affect choice persists after quitting the tool.

Transform Direction Forward (Traditional): Performs transformation according to the direction of grid lines: if grid is bent 10° to the left then the image will be bent 10° to the left too.

Backward (Corrective): Performs transformation in the reverse direction of grid lines: if grid is bent 10° to the left then the image will be bent 10° to the right and so will be set upright. This option is used to correct perspective deformations. You bend grid lines to align them on the image lines that you want straighten up then you click Transform in the Info Window. You can have to clip the image after this transformation.

Interpolation The **Interpolation** drop-down list allows you to choose the quality of the transformation. For more information about the different methods that can be employed, see the glossary entry [Interpolation](#).

Clip Result This option will clip the transformed image to the original image size.

Preview Here, Preview is superimposed on the image. The drop-down list gives you four possibilities:

- 1 **Outline:** Puts a frame to mark the image outline, with a handle on each corner. Movements will affect this frame only on the Preview, but the result of the transformation will concern either the content or the boundaries of the selection according to the selected Affect mode.
- 2 **Grid:** Puts a grid on the image, with four handles. Movements will affect this grid only on the Preview, but the result of the transformation will concern either the content or the boundaries of the selection according to the selected Affect mode.
- 3 **Image:** Here, the preview is a copy of the image superimposed on the image, with an outline. Movements affect this copy and the underlying image appears.
- 4 **Grid+Image:** Both turn at the same time.

Preview type is only for greater convenience. Whatever your choice, result will be the same when you clic on the **Transform** button in the Perspective Transform Information dialog

Options with grid activate a drop-list with two options: **Number of Grid Lines** will allow control over the total number of displayed grid lines. Use the slider to set the number of grid lines. **Grid Line Spacing** allows control over the distance between the grid lines. Use the slider to set the distance.

NOTE

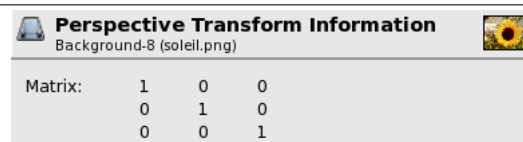


When transforming a path, Preview options are not valid: only Outline is active.

When you click on the image with the Perspective tool to transform a path, the path disappear from the image but re-appears as soon as you move a handle.

THE INFORMATION WINDOW FOR PERSPECTIVE TRANSFORMATION

Figure 8.57. The dialog window of the “Perspective” tool



Matrix You can get a small knowledge about matrices in the [Convolution Matrix](#) plug-in.

8.4.8. Flip Tool

The Flip tool provides the ability to flip layers or selections either horizontally or vertically. When a selection is flipped, a new layer with a Floating Selection is created. You can use this tool to create reflexions.

8.4.8.1. Activate Tool


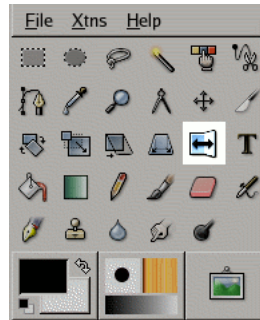
- The Flip Tool can be called in the following order, from the image-menu: **Tools/ Transform Tools/Flip**.
- The Tool can also be called by clicking the tool icon: 

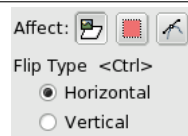
Figure 8.58. Flip tool

8.4.8.2. Key modifiers (Defaults)

Shortcut The **Shift-f** key combination will change the active tool to Flip.

Ctrl **Ctrl** lets you change the modes between horizontal and vertical flipping.

8.4.8.3. Options

Figure 8.59. “Flip Tool” Options

Overview The available tool options for the Flip Tool can be accessed by double clicking the Flip Tool icon. 

Affect The flip can affect the Layer, the Selection, and the Path differently. These three buttons associate the remainder of the options to one of those three elements. If Selection is selected, only the selection border will be flipped, and not its content. Don't forget the option persists after quitting.

Flip Type The Tool Toggle settings control flipping in either a Horizontal or Vertical direction. This toggle can also be switched using a key modifier.

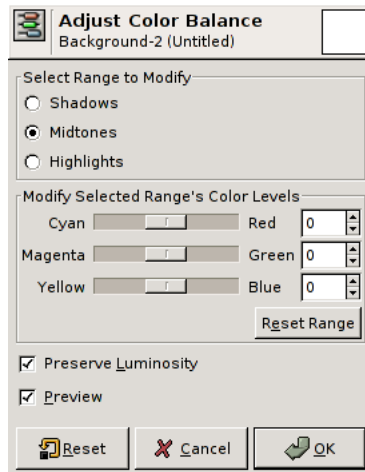
8.5. Color Tools

8.5.1. Color Balance Tool

The color balance tool modifies the color balance of the active selection or layer.

8.5.1.1. Activate Tool

The Color Balance Tool can be called in the following order, from the image-menu: **Tools/ Color Tools/Color Balance** .

Figure 8.60. Color Balance options

8.5.1.2. Options

Select range to modify Selecting one of these options will restrict the range of colors which are changed with the sliders or input boxes for Shadows, Midtons and Highlights.

Modify selected range's color levels Sliders and input boxes allow to select colors weights.

Initialize range This button sets color levels of the selected range back to zero.

Preserve Luminosity This option ensures that brightness of the active layer or selection is maintained.

Preview The Preview checkbox toggles dynamic image updating. If this option is on, any change made to the RGB levels are immediately seen on the active selection or layer.

8.5.2. Hue-Saturation Tool

The Hue-Saturation tool is used to adjust hue, saturation and lightness levels on a range of color weights for the selected area or active layer.

8.5.2.1. Activate Tool

You can call the Hue-Saturation Tool in the following order, from the image-menu: **Tools/ Color Tools/Hue-Saturation** .

8.5.2.2. Options

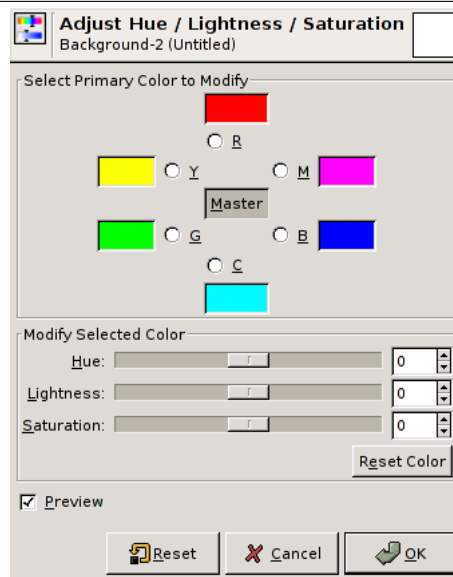
Select Primary Color to use You can choose, between six, the color to be modified. They are arranged according to the color circle. If you click on the **Master** button, all colors will be concerned with changes.

Modify selected color Changes appear in the small preview close to the selected color button.

Hue: The slider and the input box allow you to select a hue in the color circle (-180, 180).

Lightness: The slider and the input box allow you to select a value (luminosity): -100, 100.

Saturation: The slider and the input box allow you to select a saturation: -100, 100.

Figure 8.61. Hue-Saturation tool options

The **Initialize Color** button deletes changes to hue, lightness and saturation of the selected color.

Preview The Preview button makes all changes dynamically so that they can be viewed straight away.

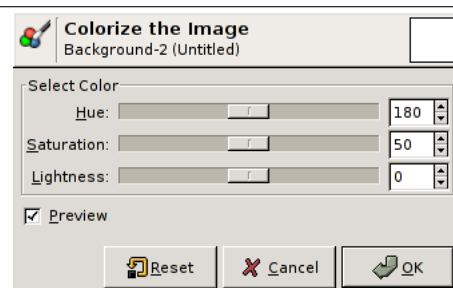
8.5.3. Colorize Tool

The Colorize tool renders the active layer or selection into a greyscale image seen through a colored glass. See [HSV Color Model](#) for Hue, Saturation, Luminosity.

8.5.3.1. Activate Tool

The Colorize Tool can be called in the following order, from the image-menu: **Tools/ Color Tools/Colorize** .

8.5.3.2. Options

Figure 8.62. Colorize options

Hue The slider and the input box allows you to select a hue in the HSV color circle (0 - 360).

Saturation The slider and the input box allows you to select a saturation: 0 through 100.

Value The slider and the input box allows you to select a value (luminosity): 0 through 100.

Preview The Preview button makes all changes dynamically so that they can be viewed immediately.

8.5.4. Brightness-Contrast tool

The Brightness-Contrast tool adjusts the brightness and contrast levels for the active layer or selection. This tool is easy to use, but relatively unsophisticated. The Levels and Curve tools allow you to make the same types of adjustments, but also give you the ability to treat bright colors differently from darker colors. Generally speaking, the BC tool is great for doing a “quick and dirty” adjustment in a few seconds, but if the image is important and you want it to look as good as possible, you will use one of the other tools.

In GIMP 2.4, a new way of operating this tool has been added: by clicking the mouse inside the image, and dragging while keeping the left mouse button down. Moving the mouse vertically changes the brightness; moving horizontally changes the contrast. When you are satisfied with the result, you can either press the “OK” button on the dialog, or hit the Return key on your keyboard.

8.5.4.1. Activate Tool

The Brightness-Contrast Tool can be called from an image menu: **Tools** → **Color Tools** → **Brightness-Contrast**. If you find yourself using this tool often, you can add it to the Toolbox using the **Tools dialog**.

8.5.4.2. Options

Brightness This slider sets a negative (to darken) or positive (to brighten) value for the brightness, decreasing or increasing bright tones.

Contrast This slider sets a negative (to decrease) or positive (to increase) value for the contrast.

Preview The Preview checkbox makes all changes to the brightness and contrast dynamically so that the new level settings can be viewed immediately.

8.5.5. Threshold Tool

The Threshold tool transforms the current layer or the selection into a black and white image, where white pixels represent the pixels of the image whose Value is in the threshold range, and black pixels represent pixels with Value out of the threshold range.

You can use it to enhance a black and white image (a scanned text for example) or to create selection masks.


NOTE



As this tool creates a black and white image, the anti-aliasing of the original image disappears. If this poses a problem, rather use the **Levels** tool.

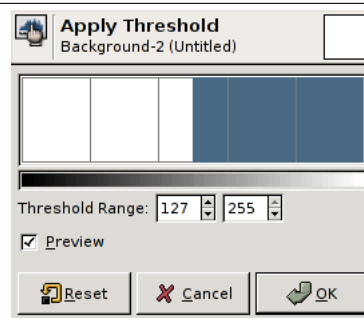
8.5.5.1. Activate Tool

The Threshold Tool can be called in the following order, from the image-menu: **Tools** → **Color Tools** → **Threshold**,

or by clicking on the  icon in Toolbox if this tool has been installed in it. You can do that through the **Tool dialog**.

8.5.5.2. Options

Figure 8.63. Threshold tool options



Threshold range The Threshold tool provides a visual graph, a histogram, of the intensity value of the active layer or selection. You can set the threshold range either using the input boxes or clicking button 1 and dragging on the graph. It allows you to select a part of the image with some intensity from a background with another intensity. Pixels inside the range will be white, and the others will be black. Adjust the range to get the selection you want in white on black background.

Preview The Preview toggle allows dynamic updating of the active layer or selection while changes are made to the intensity level.

8.5.5.3. Using Threshold and Quick Mask to create a selection mask

That's not always the case, but an element you want to extract from an image can stand out well against the background. In this case, you can use the Threshold tool to select this element as a whole. Grokking the GIMP described a method based on a channel mask, but now, using the **Quick mask** is easier.

1. First start decomposing you image into its RGB and HSV components by using the **Decompose** filter. A new grey-scaled image is created and the components are displayed as layers in the Layer Dialog. These layers come with a thumbnail but it is too small for an easy study. You can, of course, increase the size of this preview with the dialog menu (the small triangular button), but playing with the "eyes" is more simple to display the wanted layer in the decompose image. Select the layer that isolates the element the best.
2. Call the Threshold tool from the decompose image. By moving the black cursor, fit threshold to isolate the best the element you want to extract. This will probably not be perfect: we will enhance the result with the selection mask we are going to create.

WARNING



Make sure you have selected the right layer when you call the Threshold tool: when it is opened, you can't change to another layer.

3. Make sure the image displaying the selected layer is active and copy it to the clipboard with **Ctrl-C**.
4. Now, make the original image active. Click on the **Quick Mask** button at the bottom-left corner of the image window: the image gets covered with a red (default) translucent mask. This red color does not suit well to our image with much red: go to the Channel Dialog, activate the "Quick mask" channel and change this color with the **Edit Channel Attributes**. Come back to the original image. Press **Ctrl-V** to paste the previously copied layer.
5. Voilà. Your selection mask is ready: you can improve the selection as usually. When the selection is ready, disable the Quick mask by clicking again on its button: you will see the marching ants around the selection.

We used the Zoom to work at a pixel level, the Lasso to remove large unwanted areas, the pencil (to get hard limits), black paint to remove selected areas, white paint to add selected areas, especially for stem.

8.5.6. Levels tool

The Level tool provides features similar to the Histogram tool but can also change the intensity range of the active layer or selection.

8.5.6.1. Activate Tool

You can call the Level Tool in the following order, from the image-menu: **Tools** → **Color Tools** → **Levels**

8.5.6.2. Options

Modify Levels for Channel You can select the specific channel which will be modified by the tool: Value makes changes to the luminosity of all pixels in the image. Color channels allow to change saturation. Alpha channel works on transparency. **Initialize channel** cancels changes to the selected channel.

Input Levels The main area is a graphic representation of image dark, mid and light tones content (the Histogram). They are on abscissa from level 0 (black) to level 255 (white). Pixel number for a level is on ordinate axis. The curve surface represents all the pixels of the image for the selected channel. A well balanced image is an image with levels (tones) distributed all over the whole range. An image with a blue predominant color, for example, will produce a histogram shifted to the left in Green and Red channels, signified by green and red lacking on highlights.

Level ranges can be modified in three ways:

- Three triangles as sliders: one black for dark tones, one grey for midtones (often called Gamma value), one white for light tones.
- Two eyedroppers: use the left one to pick the darkest color and the right one to pick the lightest color on the image. You can use View/Info Window (Cursor tab) to find these colors.
- Three input boxes to enter values directly.

Output Levels Output Levels allows manual selection of a constrained output level range. There are also arrow-heads located here that can be used to interactively change the Output Levels.

All Channels Open: This button allows you to select a file holding level settings.

Save: Allows you to save any levels you have set to a file that can be loaded later.

Auto: Performs an automatic setting of the levels.

Three eyedroppers: These three controls determine three points on the grayscale. Any level below the "Black Point" is black; any point above the "White Point" is white. The "Gray Point",

which must be between the other two, determines the middle level of Gray. All shades of gray are calculated from these three levels.

Preview The Preview button makes all changes to the levels dynamically so that the new level settings can be viewed straight away.

TOOL OPTIONS DIALOG

Although this tool is not present in Tool box, nevertheless it has a Tool Option Dialog under the Toolbox. These options are described here:

Histogram Scale These two options have the same action as the logarithmic and Linear buttons in the Levels dialog.

Sample Average This slider sets the “radius” of the color-picking area. This area appears as a more or less enlarged square when you maintain the click on a pixel.

8.5.7. Curves Tool

The Curves tool is the most sophisticated tool used to adjust the tonality of images.

8.5.7.1. Activate Tool

The Curves Tool can be called in the following order, from the image-menu: **Tools/ Color Tools/ Curves**.

8.5.7.2. Adjust Color Curves

Channel There are five options: Value for luminosity and contrast; Red, Green, and Blue for saturation; and Alpha (if your image has an Alpha channel).

Reset Channel This button deletes all changes made to the selected channel.

Linear and Logarithmic buttons These buttons allow to choose the Linear or Logarithmic type of the histogram. You can also use the same options in Tool Options dialog.

Main Editing Area Input and Output Value Domains: The horizontal bar (x-axis) represents input values (they are value levels from 0 to 255). The vertical bar (y-axis) is only a scale for output colors of the selected channel.

The control curve is drawn on a grid and goes from bottom left corner to top right corner. Pointer x/y position is permanently displayed in top left part of the grid. If you click on the curve, a **Control point** is created. You can move it to bend the curve. If you click outside of the curve, a control point is also created, and the curve includes it automatically.

So, each point of the curve represents an ‘x’ level, corresponding to an ‘y’ color. If, for example, you move a curve segment to the right, i.e to highlights, you can see that these highlights are corresponding to darker output tones and that image pixels corresponding to this curve segment will go darker. With color channels, moving right will decrease saturation and can reach the complementary color.

To delete all control points (apart from both ends), click on the **Initialize Channel** button. To delete only one point, move it onto another point or to grid border.

All Channels Open: This button allows you to select a file holding curve settings.

Save: Allows you to save any curves you have set to a file that can be loaded later.

Curve Type Smooth: This mode constrains the curve type to a smooth line with tension. It provides a more realistic render than the following.

Free: You can draw your curve free-hand with the mouse. With curve segments scattered all over the grid, result will be surprising, but poorly repeatable.

Preview The Preview button makes all changes to the levels dynamically so that the new level settings can be viewed immediately.

TOOL OPTIONS DIALOG

Although this tool is not present in Tool box, nevertheless it has a Tool Option Dialog under the Toolbox. These options are described here:

Histogram Scale These two options have the same action as the logarithmic and Linear buttons in the Curves dialog.

Sample Average This slider sets the “radius” of the color-picking area. This area appears as a more or less enlarged square when you maintain the click on a pixel.

8.5.8. Posterize Tool

This tool is designed to intelligently weigh the pixel colors of the selection or active layer and reduce the number of colors while maintaining a semblance of the original image characteristics.

8.5.8.1. Activate Tool

The Posterize Dialog can be called in the following order, from the image-menu: **Tools** → **Color Tools** → **Posterize**

or by double-clicking on the  icon in ToolBox, if Color Tools have been added to it.

8.5.8.2. Options

Posterize Levels This slider and the input boxes with arrow-heads allow you to set the number of levels (2-256) in each RVB channel that the tool will use to describe the active layer. The total number of colors is the combination of these levels. A level to 3 will give $2^3 = 8$ colors.

Preview The Preview checkbox makes all changes dynamically so that they can be viewed straight away.

8.6. Other

8.6.1. Path Tool

The Path tool allows to create complex selections called Bezier Curves, a bit like Lasso but with all the adaptability of vectorial curves. You can edit your curve, you can paint with your curve, or even save, import, and export the curve. You can also use paths to create geometrical figures. Paths have their own dialog box: **Dialog**.

8.6.1.1. Activate Tool

- You can call the Path Tool in the following order, from the image-menu: **Tools** → **Paths**.



- The Tool can also be called by clicking the tool icon:
- or by using the **B** keyboard shortcut.

8.6.1.2. Key modifiers (Defaults)

Shift This key has several functions depending on context. See Options for more details.

Ctrl/Alt Three modes are available to work with the Path tool: **Design**, **Edit** and **Move**. **Ctrl** key toggles between Design and Edit. **Alt** (or Ctrl+Alt) key toggles between Design and Move.

8.6.1.3. Options

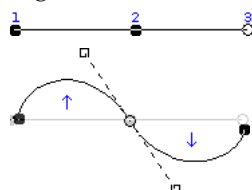
Overview The available tool options for the Path Tool can be accessed by double clicking the Path Tool



icon.

As with other tools, you can delete your changes by **Ctrl-Z**.

Design Mode By default, this tool is in **Design** mode. You draw the path by clicking successively. You can move control points by clicking on them and dragging them. Between control points are segments.



TIP



To quickly close the curve, press **Ctrl** key and click on the initial control point. In previous versions, clicking inside a closed path converted it into Selection. Now, you can use the *Create selection from path* button or the *Path to Selection* button in the Path Dialog.

TIP



When you have two handles, they work symmetrically by default. Release the pressure on the mouse button to move handles individually. The **Shift** key will force the handles to be symmetrical again.

Several functions are available with this mode:

Add a new node: if the active node (a small empty circle after clicking on a node) is at the end of the path, the mouse pointer is a '+' sign and a new node is created, linked to the previous one by a segment. If the active node is on the path, the pointer is a square and you can create a new component to the path. This new component is independant from the other, but belongs to the path as you can see on the Path dialog. Pressing **Shift** forces the creation of a new component.

Move one or several nodes: On a node, the mouse pointer becomes a 4-arrows cross. You can click and drag it. You can select several nodes by **Shift** and click and move them by click and drag. Pressing **Ctrl-Alt** allows to move all the path, as a selection.

Modify handles: you have to Edit a node before. A handle appears. Drag it to bend the curve. Pressing **Shift** toggles to symmetric handles.

Modify segment: When you click on a segment, the mouse pointer turns to a 4-arrows cross. Drag it to bend the segment. As soon as you move, handles appear at both ends of the segment. Pressing **Shift** key toggles to symmetric handles.

Edit Mode Edit performs functions which are not available in **Design** mode. With this mode, you can work only on the existing path. Outside, the pointer is a small crossed circle (on the whole image if there is no path!) and you can do nothing.

Add a segment between two nodes: Click on a node at one end of the path to activate it. Pointer is like a union symbol. Click on an other node to link both nodes. This is useful when you have to link unclosed components.

Remove a segment from a path: While pressing **Shift-Ctrl** key combination, point to a segment. Pointer turns to -. Click to delete the segment.

Add a node to a path: point to a segment. Pointer turns to +. Click where you want to place the new control point.

Remove a node: While pressing **Shift-Ctrl** key combination, point to a node. Pointer turns to -. Click to delete the node.

Add a handle to a node: Point to a node. Pointer turns to small hand. Drag the node: handle appears. Pressing **Shift** toggles to symmetric handles.

Remove a handle from a node: While pressing **Shift-Ctrl** key combination, point to a handle. Pointer doesn't turn to the expected - and remains a hand. Click to delete the handle.

CAUTION



No warning before removing a node, a segment or a handle.

Move Mode Move mode allows to move one or all components of a path. Simply click on the path and drag it.

If you have several components, only the selected one is moved. If you click and drag outside the path, all components are moved. Pressing **Shift** key toggles to move all components also.

Polygonal With this option, segments are linear only. Handles are not available and segments are not bent when moving them.

Create selection from path This button allows creation of a selection that is based on the path in its present state. This selection is marked with the usual "marching ants". Note that the path is still present: current tool is still path tool and you can modify this path without modifying the selection that has become independant. If you change tool, the path becomes invisible, but it persists in Path Dialog and you can re-activate it.

If the path is not closed, Gimp will close it with a straight line.

As the help pop-up tells, pressing **Shift** when clicking on the button will add the new selection to an eventually preexistent. Pressing the **Ctrl** will subtract the selection from the preexistent and the **Shift–Ctrl** key combination will intersect the two selections.


Stroke path In previous versions, you could access to this command only by the Edit sub-menu in the Image Menu. Now you can access to it also via this button. See [Stroke Path](#) and [Stroke Path](#).

See [The “Path” concept](#).

8.6.2. Color Picker Tool

The Color Picker Tool is used to find colors on the active layer or image. By clicking a point on an image or layer, you can change the active color to that which is located under the pointer. Using the Sample Merge option will allow you to select colors which are formed by layers with less than full opacity or layers which are using layer modes.

8.6.2.1. Activate Tool

- The Color Picker Tool can be called in the following order, from the image-menu: **Tools** → **Color Picker**.
- The Tool can also be called by clicking the tool icon: 

NOTE



If you hold **Ctrl** key down while using a paint tool, mouse pointer turns to the color-picker icon. If you click then, you select the color pointed by the color-picker as foreground color. Color-picker dialog is not opened during this operation.

8.6.2.2. Key modifiers (Defaults)

Shortcut **Shift–o** will activate the Color Picker tool.

8.6.2.3. Options

Overview The available tool options for the Color Picker can be accessed by double clicking the Color Picker tool icon.

Sample Merged The Sample Merged checkbox when enabled will take color information as a composite from all the visible layers. Further information regarding Sample Merge is available in the glossary entry, [Sample Merge](#).

Sample Average The **Radius** slider adjusts the size of the square area that is used to determine an average color for the final selection. When you click the layer, the cursor will indicate the size of the square or radius visually.

Pick Mode

Pick Only The color of the selected pixel will be shown in an Information Dialog, but not otherwise used.

Set Foreground Color The Foreground color, as shown in the Toolbox Color Area, will be set to the color of the pixel you click on.


Set Background Color The Background color, as shown in the Toolbox Color Area, will be set to the color of the pixel you click on.

Add to Palette When this option box is checked, the picked color is sent to the active color palette. see [Palette Editor](#)

8.6.3. Magnify Tool

The Magnify Tool is used to change the zoom level of your working image. If you only click on the image, the zoom is applied to the whole image. But you can also click-and-drag the mouse pointer to create a zoom rectangle. Then, the action of this rectangle is better understood if the “Allow window resizing” option is unchecked: you can see that the content of this rectangle will be enlarged or reduced so that its biggest dimension fit the corresponding dimension of the image window (if the biggest dimension of the rectangle is width, then it will fit the width of the image window).


8.6.3.1. Activate Tool

- The Magnify Tool can be called in the following order, from the image-menu: **Tools** → **Magnify**.
- The Tool can also be called by clicking the tool icon: 

8.6.3.2. Key modifiers (Defaults)

Ctrl Holding **Ctrl** when clicking on a point of your image will change the zoom direction from zooming in to zooming out.

8.6.3.3. Options

Overview The available tool options for Magnify can be accessed by double clicking the Magnify tool icon. 

Allow Window Resizing This option will allow the window containing your image to be resized if the zoom level dictates it.

Tool Toggle The two available tool toggles are used for changing the zoom direction between zooming in and zooming out.

Threshold “This option sets the size that a dragged zoom rectangle must be before zooming to that rectangle actually occurs. A higher Threshold will require a larger rectangle before zooming to that rectangle happens. If the size of the rectangle is too small the image is zoomed in by one level.” (This option is not clear)

8.6.3.4. Zoom menu

Using the Magnify tool is not the only way to zoom an image. The **Zoom menu** provides access to several functions for changing the image magnification level. For example, you can easily choose an exact magnification level from this menu.

8.6.4. Measure Tool


The Measure Tool is used to gain knowledge about pixel distances in your working image. By clicking and holding the mouse button, you can determine the angle and number of pixels between the point of click and where the mouse pointer is located. The information is displayed on the status bar or can also be displayed in the Info Window.

When you pass the mouse pointer over the end point it turns to a move pointer. Then if you click you can resume the measure.

8.6.4.1. Status Bar

Informations are displayed in the **status bar**, at the bottom of the Image window. The status bar shows a pair of numbers. The first number is the *distance between the origine point and the mouse pointer*. Mostly the measure unit is shown as *Pixel*. The second number is the *angle* in every quadrant, from 0° to 90°.

8.6.4.2. Activate Tool

- You can call the Measure Tool in the following order, from the image-menu: **Tools** → **Measure**.
- You can also access to it by clicking the tool icon: 

8.6.4.3. Key modifiers

Defaults Holding down the **Ctrl** key puts the tool into constrained straight line mode. The orientation of the line is constrained to the nearest multiple of 15 degrees.

Holding down the **Shift** allows to start a new measure from the pointed point without deleting the previous measure. Angle is measured from the previous line. Mouse pointer is accompanied by a "+" sign. So, you can *measure an angle*

Ctrl key pressed and click on an end point creates a horizontal guide.

Alt key and click on an end point should create a vertical guide...

Ctrl-Alt key combination and click on an end point creates a vertical and a horizontal guides.

Ctrl-Alt key combination and click on a measure line allows to move the measure.

8.6.4.4. Options

Overview There is only one available option for the Measure Tool.

Use Info Window This option will display an Info Window dialog that details the measure tool results. The results are more complete on the status bar.


8.6.4.5. Measuring surfaces

You can't measure surfaces directly, but you can use the **Histogram** that gives you the number of pixels in a selection.


8.6.5. Texttool

The Text tool places text into an image. When you click on an image with this tool the *Text Editor dialog* is opened where you can type your text, and a text layer is added in the Layer Dialog. In the *Text Option dialog*, you can change the font, color and size of your text, and justify it, interactively.

8.6.5.1. Activate Tool

- The Text Tool can be called in the following order, from the image-menu: **Tools** → **Text**.
- The Tool can also be called by clicking the tool icon: 
- or by using the **T** keyboard shortcut.

8.6.5.2. Options

Overview The available tool options for the Texttool can be accessed by double clicking the texttool icon: 

Font There are two ways of selecting fonts in the GIMP. The first is from the image Dialogs/Fonts menu. The second is with the Font selector in this tool. Both methods select from the installed X fonts. When you select a font it is interactively applied to your text.

NOTE



You can get special characters in the same way as you get them in other text editors: **AltGr** + key in Linux, **Alt** + number key pad in Windows.

Size This control sets the size of the font in any of several selectable units.

Hinting Uses the indices of adjustment to modify the characters in order to produce clear letters in small font sizes.

Force Auto-Hinter **Auto Hinder** tries to automatically compute information for better representation of the character font.

Antialiasing Antialiasing will render the text with much smoother edges and curves. This is achieved by slight blurring and merging of the edges. This option can radically improve the visual appearance of the rendered typeface. Caution should be exercised when using antialiasing on images that are not in RGB color space.

Color Color of the text that will be drawn next. Defaults to black. Selectable from the color picker dialog box that opens when the current color sample is clicked.

Justify Causes the text to be justified according to any of four rules selectable from the associated icons.

Indent Controls the indent spacing from the left margin.

Line Spacing Controls the spacing between successive lines of text. This setting is interactive: it appears at the same time in image text. The number is not the space between lines itself, but how many pixels must be added to or subtracted from this space (the value can be negative).

Create Path from Text This tool creates a selection path from the selected text. You can retrieve it later in Path Dialog to modify it.

8.6.5.3. Text Editor

Overview This dialog window is opened when you click on the image with the Text Tool. It's a still basic text editor that nevertheless allows you to write on several lines. Word wrap is not possible - the text layer lengthens gradually - and you have to press the **Enter** key to move to the next line.

The text you type appears interactively in the image. If the option "Show Layer Boundary" is checked in the View menu, this text will be surrounded with black and yellow dashes that mark the layer boundary. Now look, it's not a selection: if you want to move the text, you must click on the text itself and not inside this frame only.

You can correct the text you are writing and you can change the text font with the Font Editor.

You can move the text by using the Move Tool, but you loose the Editor then. You can re-edit this text as you will see now.

As soon as you start writing, a Text layer is created in the Layer Dialog. On an image with such a layer (the image you are working on, or a .xcf image), you can resume text editing by activating this text layer then clicking on it (double click).

To add another text to your image click on a non-text layer: a new Text Editor will appear and a new text layer will be created. To pass from a text to another one activate the corresponding text layer and click on it to activate the editor.

Load Text from File Text can be loaded from a text file by clicking the folder icon in the text editor.

Clear all Text Clicking this icon clears the editor and the associated text on the image.

From Left to Right This option causes text to be entered from left to right, as is the case with most Western languages and may Eastern languages.

From Right to Left This option allows text to be entered from right to left, as is the case with some Eastern languages, such as Arabic (illustrated in the icon).

8.7. Color and Indicator Area

8.7.1. Color Area

Color area This area shows GIMP's basic palette, consisting of two colors, the Foreground and Background, used for painting, filling, and many other operations. Clicking on either of the color displays brings up a Color Editor dialog, which permits you to change it.

Default colors Clicking on this small symbol resets the Foreground and Background colors to black and white, respectively.

Swap FG/BG colors Clicking on the small curved line with two arrowheads causes the Foreground and Background colors to be swapped. Pressing the x key has the same effect.

8.7.2. Indicator Area

This part of the Toolbox shows the currently selected brush, pattern, and gradient. Clicking on any of them brings up a dialog that allows you to change it.

8.7.3. Active image area

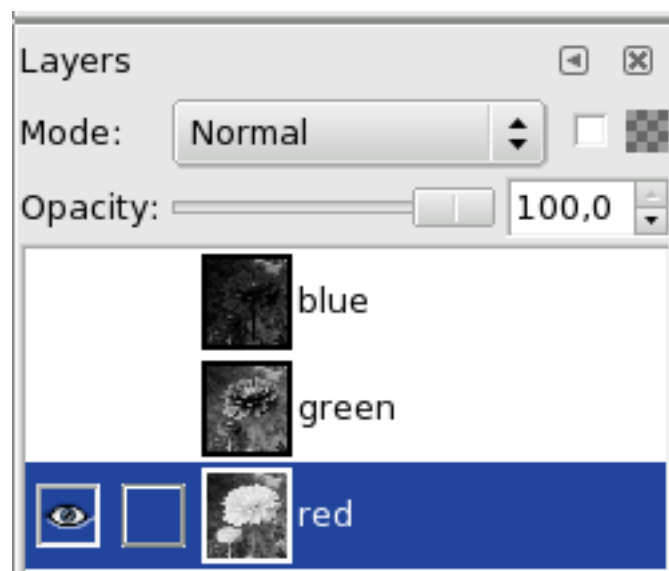
A thumbnail of the active image can be displayed in this area if the “Display Active Image” option is checked in Preferences/Toolbox.

Figure 8.64. The original image, the decompose image and its Layer Dialog



(a)

(b)



(c)

Figure 8.65. The selected layer after threshold fit. We got the best outline for our flower. There are several red objects which we must remove.



Figure 8.66. The mask

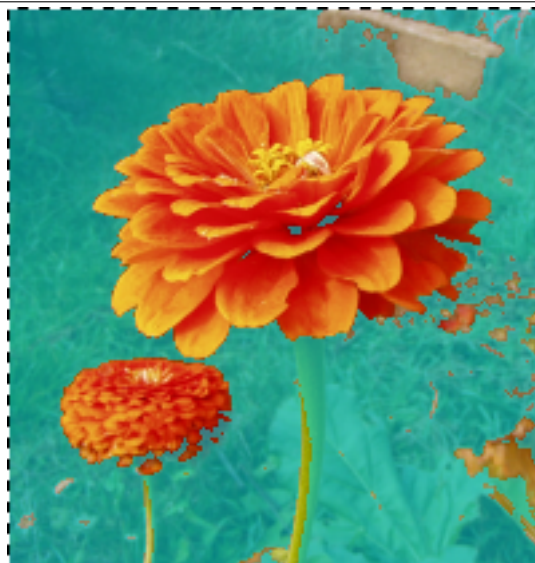


Figure 8.67. The result



Figure 8.68. Level tool options

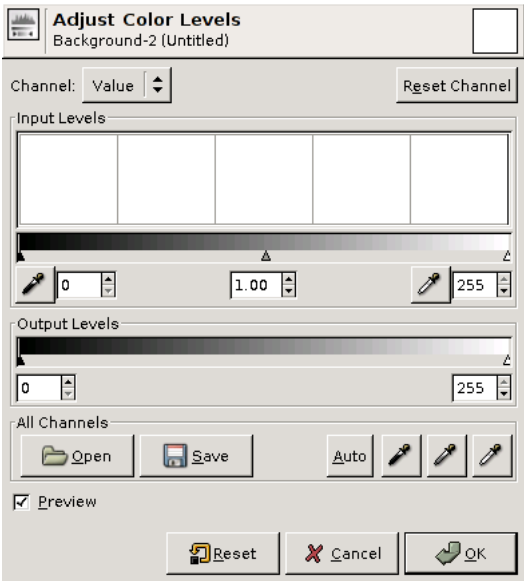


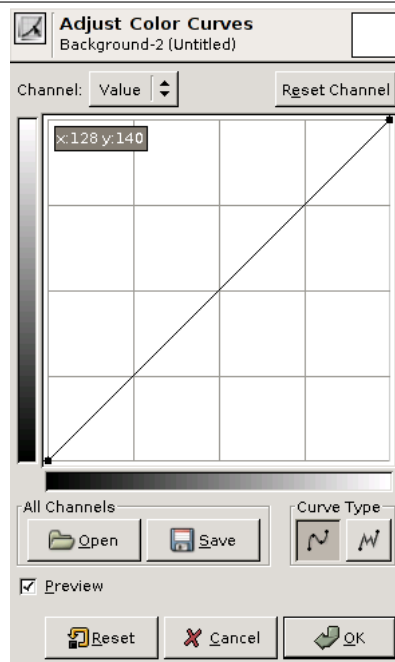
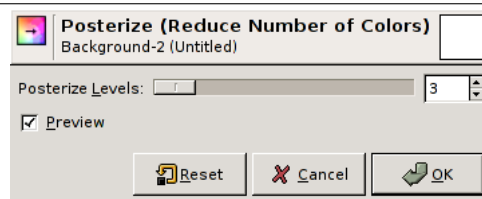
Figure 8.69. Curves tool**Figure 8.70.** Posterize tool options**Figure 8.71.** Path tool**Figure 8.72.** Eye dropper

Figure 8.73. Zoom tool

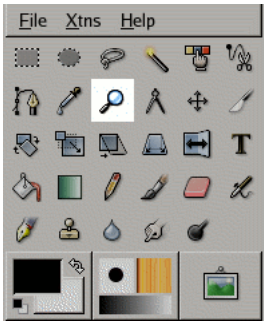


Figure 8.74. Zoom tool options

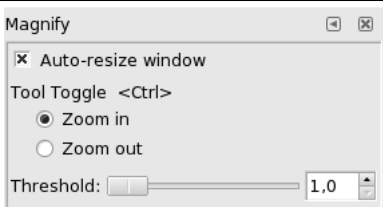
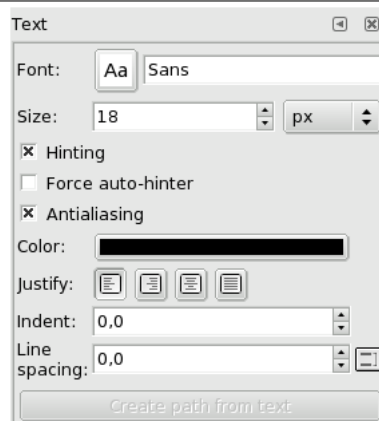
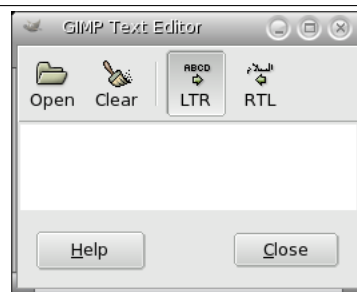


Figure 8.75. Measure tool



Figure 8.76. The Text tool in Toolbox



Figure 8.77. Text tool options**Figure 8.78.** The Text Editor options**Figure 8.79.** Color area in the Toolbox Palette**Figure 8.80.** Active tool indicator area

9. Dialogs

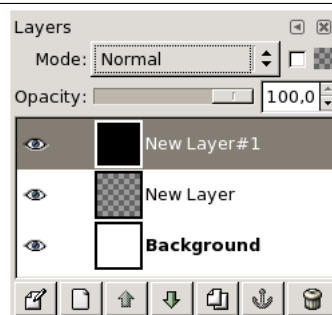
9.1. Dialog introduction

Dialogs are the most common means of setting options and controls in the GIMP. The most important dialogs are explained in this section.

9.2. Image structure related dialogs

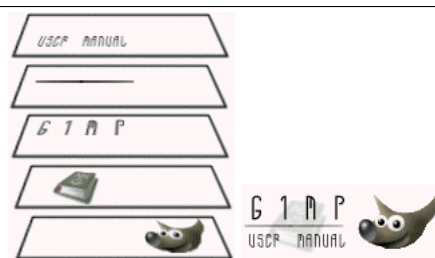
9.2.1. Layers dialog

Figure 9.1. Layer Dialog



The Layers dialog is the main interface to edit, modify and manage your layers. You can think of layers as a stack of slides or clothes on your body. Using layers, you can construct an image of several conceptual parts, each of which can be manipulated without affecting any other part of the image. Layers are stacked on top of each other. The bottom layer is the background of the image, and the components in the foreground of the image come above it.

Figure 9.2. An image with layers



(a) Layers of the image (b) Resulting image:

9.2.1.1. Activate Dialog


The Layer dialog can be called in many ways :


- from the toolbox-menu: **File** → **Dialog** → **Layers**
- from the image-menu: **Dialog** → **Layers**
- from an other dialog-menu: **Add Tab** → **Layers**
- from the (default) shortcut: **Ctrl-L**

9.2.1.2. Using the Layerdialog

Overview Every layer appears in the dialog in the form of a thumbnail. When an image has multiple layers as components, they appear as a list. The upper layer in the list is the first one visible, and the lowest layer the last visible, the background. Above the list one can find characteristics related individually to each layer. Under the list one can find management buttons for the layer list. A right-click in a layer thumbnail opens the Layer **menu**.

Layer attributes Every layer is shown in the list along with its attributes. The main attribute is the name of the layer. You can edit this by a double-click on the name or the thumbnail of the layer. In

front of the thumbnail is an icon showing an eye . By clicking on the eye, you toggle whether the layer is visible or not. (Shift-clicking on the eye causes all *other* to be temporarily hidden.)

Another icon, showing a chain , allows you to group layers for operations on more than one layer at a time (for example with the Move tool).

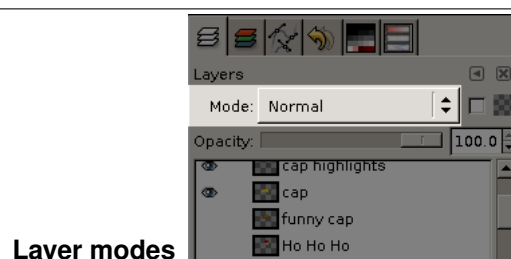
TIP



In the case of an animation layer (GIF or MNG), the name of the layer can be used to specify certain parameters : Layer_name (delay in ms) (combination mode), for example Frame-1 (100 ms) (replace). The **delay** sets the time during which the layer is visible in the animation. The combination mode sets whether you combine the layer with the previous layer or replace it: the two modes are (combine) or (replace).

Layers characteristics Above the layer list, it is possible to specify some properties for the active layer. The active layer is the one highlighted in blue. The properties are : "Layer mode", "Keep transparency", and "Opacity".

Figure 9.3. Layer modes

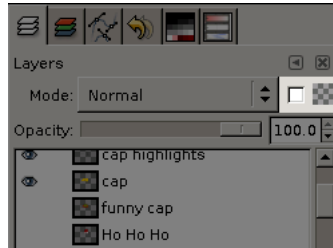
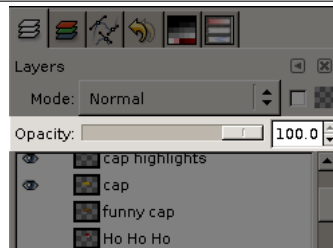


Layer modes

The layer mode determines how the layer interacts with the other layers. From the combo box you can access all the modes provided by GIMP. The layer modes are fully detailed in the **Glossary**.

If you check this option the transparent areas of the layer will be kept, even if you have checked the **Fill transparent areas** option for the Bucket fill tool.

By moving the slider you give more or less opacity to the layer. With a 0 opacity value, the layer is transparent and completely invisible. Don't confuse this with a Layer Mask, which sets the transparency pixel by pixel.

Figure 9.4. Keep transparency**Keep transparency****Figure 9.5.** Opacity**Opacity**

Layer management Under the layer list a set of buttons allows you to perform some basic operations on the layer list.



Edit layer attributes Here you can change the name of the active layer in the list.



New layer Here you can create a new layer. A dialog is opened where you can enter the **Layer name**, perhaps change the default **Height** and **Width**, and choose the **Layer fill type** that will be the new layer's background.



Raise layer Here you can move the layer up a level in the list. Press the **Shift** key to move the layer to the top of the list.



Lower layer Here you can move the layer down a level in the list. Press the **Shift** key to move the layer to the bottom of the list.


TIP

To move a layer at the bottom of the list, it may first be necessary to add a transparency channel (also called Alpha channel) to the Background layer. To do this, right click on the Background layer and select **Add Alpha channel** from the menu.



Duplicate layer Here you can create a copy of the active layer. Name of new layer is suffixed with a number.



Anchor layer When the active layer is a temporary layer (also called floating selection) shown by this icon , this button anchors it to the previous active layer.



Delete layer Here you can delete the active layer.

More layer functions Other functions about *layer size* are available in the **Layer Drop down menu** you get by right clicking on the Layer Dialog. You can find them also in the Layer sub-menu of the image menu.

You will find *merging layers functions* in the **Image submenu** of the Image menu.

Clicking-and-dragging layers Click and hold on layer thumbnail: it enlarges and you can move it by dragging the mouse.

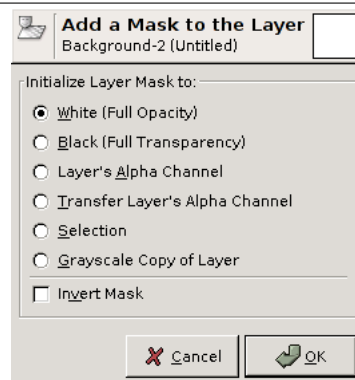
So you can put this layer down *somewhere else in the layer list*.

You can also *put the layer down into Toolbox* : a new image is created that contains this layer only.

Finally, you can *put the layer down into another image* : this layer will be added to the layer list, above existing layers.

9.2.1.3. Layer masks

Figure 9.6. Dialog add mask



Overview A transparency mask can be added to each layer, it's called Layer mask. A layer mask has the same size and same pixel number as the layer to which it is attached. Every pixel of the mask can then be coupled with a pixel at the same location in the layer. The mask is a set of pixels in gray-tone on a value scale from 0 to 255. The pixels with a value 0 are black and give a full transparency to the coupled pixel in the layer. The pixels with a value 255 are white and give a full opacity to the coupled pixel in the layer.

To create a layer mask start with a right click on the layer to call the context menu and select **Add layer mask** in the menu. If the menu item is grayed first select **Add Alpha channel** in the same menu. A dialog appears where you can initialize the content of the mask:

- **White (full opacity):** the mask has no effect, all layer pixels are full visible.
- **Black (full transparency):** the mask gives a full transparency to the layer which becomes invisible.
- **Layer's alpha channel:** the mask is initialized according to the content of layer Alpha channel. If the layer still contains transparency it's copied in the mask.
- **Transfer layer's alpha channel:** Does the same thing as the previous option, except that it also resets the layer's alpha channel to full opacity.
- **Selection :** the mask is initialized according to pixel values found in the selection.

- **Grayscale copy of layer:** the mask is initialized according to pixel values of the layer.

When the mask is created it appears as a thumbnail right to the layer thumbnail. By clicking alternatively on the layer and mask thumbnail you can enable one or other. The active item is highlighted by a white border (which is not well visible around a white mask). To view mask content instead of its effect in image window, press **Ctrl+Alt** and then on mask thumbnail. Its border turns to red. To return to normal view redo last operation.

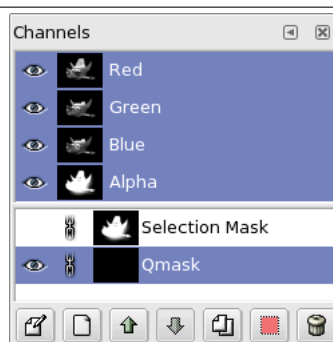
CAUTION



The layer mask acts like a transparency mask on a particular layer. Since you have many layers it becomes different from the image Alpha channel which represents transparency applied to the whole image.

9.2.2. Channels dialog

Figure 9.7. The Channel dialog



The Channels dialog is the main interface to edit, modify and manage your channels. Channels have a double usage. This is why the dialog is divided into two parts: the first part for color channels and the second part for selection masks.

Color channels: Color channels apply to the image and not to a specific layer. Basically, three primary colors are necessary to render all the wide range of natural colors. As other digital software, the Gimp uses Red, Green, and Blue as primary colors. The first and primary channels display the **Red**, **Green**, and **Blue** values of each pixel in your image. In front of each channel is a thumbnail displaying a grayscale representation of each channel, where white is 100% and black is 0% of the primary color. Alternatively, if your image is not a colored but a Grayscale image, there is only one primary channel called **Gray**. For an Indexed image with a fixed number of known colors there is also only one primary channel called **Indexed**. Then there is an optional channel called **Alpha**. This channel displays transparency values of each pixel in your image. In front of this channel is a thumbnail displaying a grayscale representation of the transparency where white is opaque and visible, and black is transparent and invisible. If you create your image without transparency then the Alpha channel is not present, but you can add it from the **Layers dialog menu**. Also, if you have more than one layer in your image, Gimp automatically creates an Alpha channel.

NOTE



Gimp doesn't support CMYK or YUV color models.

Figure 9.8. Representation of an image with channels

The right image is decomposed in three color channels (red, green, and blue) and the Alpha channel for transparency. On the right image the transparency is displayed as a gray checkerboard. In the color channel white is always white because all the colors are present and black is black. The red hat is visible in the red channel but quite invisible in the other channels. This is the same for plain green and blue which are visible only in their own channels and invisible in others.

9.2.2.1. Calling the Dialog


The Channel dialog can be activated in many ways :


- from the toolbox-menu: **File** → **Dialogs** → **Channels**
- from the image-menu: **Dialogs** → **Channels**
- from another dialog-menu: **Add Tab** → **Channels**

9.2.2.2. Using the Channeldialog

Overview The top channels are the color channels and the optional Alpha channel. They are always organized in the same order and they cannot be erased. Selection masks are described below and displayed as a list in the dialog. Every channel appears in the list in form of a thumbnail. A right-click in a channel thumbnail opens the **channel menu**.

Channel attributes Every channel is shown in the list with its own attributes. The main attribute is the name of the channel itself. You can edit selection masks by double-clicking on their name. A double-click on the thumbnail opens a full dialog where you can also set the visual aspect of the channel

in the image window. In front of the thumbnail there is an eye icon:  by clicking on it you define whether the channel is visible or not. As a result of this visibility, the view of the image changes in the image window and a white image becomes yellow if you remove the view of the blue because yellow is the complementary color for blue. If you remove the view of the Alpha channel, everything becomes transparent and nothing else than a gray checkerboard is visible. The aspect of this virtual background

can be changed in the **Preferences**. The chain icon  enables grouping of channels for operations on multiple channels.

CAUTION



Activated channels appear highlighted in blue in the dialog. If you click on a channel in the list you toggle activation of the corresponding channel. Disabling a color channel red, blue, or green has severe consequences. For instance if you disable the blue channel, all pixels from now on added to the image will not have blue component, and so a white pixel will have the yellow complementary color.

Managing channels Under the channel list is a set of buttons allowing you to perform some basic operations on channel list.



Edit channel attributes, only available for selection masks. Here you can change the **Channel name**. The other two parameters affect channel visibility in the image window; they control **Opacity** and color used for the mask in the image window. A click on the color button displays the Gimp color selector and then you can change the mask color.



New channel you can create here a new channel available to save a selection. Displayed dialog lets you change **Opacity** and mask color used in the image to represent the selection.



Raise channel, only available for selection masks : you can here put the channel up a level in the list. Press **Shift** key to move channel to top of the list.



Lower channel You can here put the channel down a level in the list. Press the **Shift** key to move the channel to bottom of the list.



Duplicate channel You can create here a copy of the active channel. Name of new channel is suffixed with a number.

TIP



You can also duplicate a color channel or the Alpha channel. It's an easy way to keep a copy of them and to use them later as a selection in an image.



Channel to selection here you can transform the channel to become a selection. By default the selection derived from a channel replaces any previous active selection. It's possible to change this by clicking on control keys.

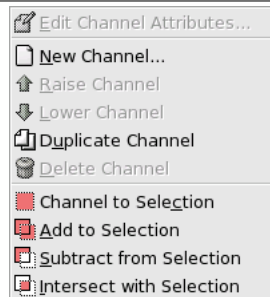
- **Shift**: the selection derived from a channel is added to the previous active selection. The final selection is merged from both.
- **Ctrl**: the final selection is the subtraction of selection derived from a channel from the previously active one.
- **Shift-Ctrl**: the final selection is the intersection of selection derived from a channel with the previously active one. Only common parts are kept.



Delete channel only available for selection masks: you can here delete the active channel.

9.2.2.3. Channels Menu

Figure 9.9. Channels Menu

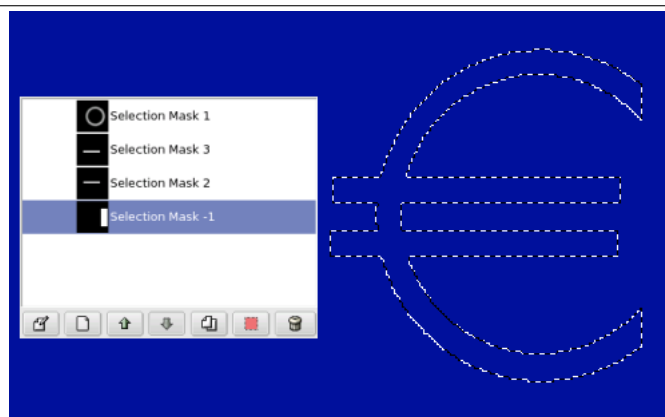


Overview You can get the channel context menu by right clicking on a channel thumbnail. This menu gives the same operations on channels as those available from dialog buttons. The only difference concerns transformation to selection operations, each of them having its own entry in the menu.

- **Edit channel attributes, New channel, Raise channel, Lower channel, Duplicate channel, Delete channel:** see [Managing channels](#).
- **Channel to selection:** Selection derived from channel replaces any previous active selection.
- **Add to selection:** Selection derived from channel is added to previous active selection. Final selection is merging of both.
- **Subtract from selection:** Final selection is subtraction of selection derived from a channel from previous active selection.
- **Intersect with selection:** Final selection is intersection of selection derived from a channel with the previous active selection. Only common parts are kept.

9.2.2.4. Selection masks

Figure 9.10. A selection composed out of channels.



Channels can be used to save and restore your selections. Clicking on the **Quick mask** button on the [Image window](#) automatically creates a new channel called **Qmask** and saves the displayed active selection to a thumbnail in front of the channel. There are many selection tools in the Gimp like rectangular

selection tool or fuzzy selection for continuous selections. Selection Masks are a graphical way to build selections into a gray level channel where white pixels are selected and black pixels are not selected. Therefore gray pixels are partially selected. You can think of them as feathering the selection, a smooth transition between selected and not selected. This is important to avoid the ugly pixelization effect when you fill the selection or when you erase its content after isolating a subject from background.

Creating Selection Masks There are several ways to initialize a selection mask. From the image window menu **Select** → **Save to Channel** if there is an active selection. From the image window the bottom-left button creates a **Quick Mask**; the content will be initialized with the active selection. From the channel dialog, when you click on the **New channel** button or from the context menu. When created, this Selection mask appears in the Channel dialog, named “Selection mask copy” with a queuing number. You can change this by using the context menu that you get by right-clicking on the channel.

Using Selectionmasks Once the channel is initialized, selected (highlighted in blue), visible (eye-icon in the dialog), and displayed as you want (color and opacity attributes), you can start to work with all the paint tools. The colors used are important. If you paint with some color other than white, grey, or black, the color Value (luminosity) will be used to define a gray (medium, light, or dark). When your mask is painted, you can transform it to a selection by clicking on the **Channel to selection** button or from the context menu.

You can work in selection masks not only with the paint tool but also with other tools. For instance, you can use the selection tools to fill areas uniformly with gradients or patterns. By adding many selection masks in your list you can easily compose very complex selections. One can say that a selection mask is to a selection as a layer is to an image.

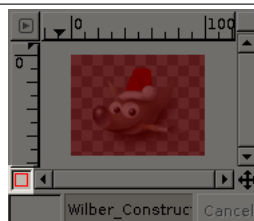
CAUTION



As long as a selection mask is activated you are working in the mask and not in the image. To work in the image you have to deactivate all selection masks. Don't forget also to stop displaying masks in the image by removing the eye icon. Check also that all RGB and Alpha channels are activated and displayed in the image.

9.2.2.5. Quick Mask

Figure 9.11. Dialog Quick Mask




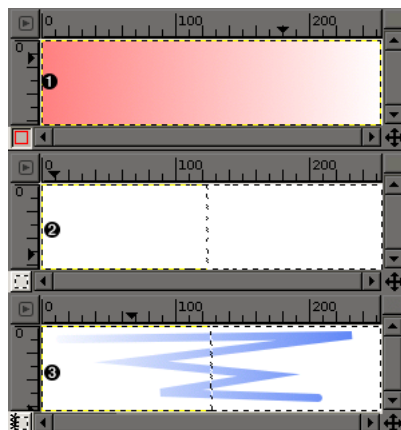
A **Quick Mask** is a **Selection Mask** intended to be used temporarily to paint a selection. Temporarily means that, unlike a normal selection mask, it will not be saved in the list after its transformation to selection. The **selection tools** sometimes show their limits when they have to be used for doing complex drawing selection, as progressive. In this case, using the QuickMask is a good idea which can give very good results.

Activate Tool

- The QuickMask can be activated in the following order, from the image-menu: **Select/Toggle QuickMask**.
- The QuickMask can also be activated by clicking the left-bottom button showed in red on the screenshot.
- It can also be activated by using **Shift+Q** shortcut.

Creating a Quick Mask To initialize a **Quick Mask**, click the bottom-left button in the image window. If a selection was active in your image, then its content appears unchanged while the border is covered by a translucent red color. If no selection was active then all the image is covered by a translucent red color.

At every moment you can hide the mask by clicking on the eye icon  in front of the **QMask**. From the channel dialog you can double click on the name or the thumbnail to edit the **QMask** attributes. Then you can change the **Opacity** and its filling color. Once a quick mask is initialized click on it to be sure it is selected and blue highlighted in the list, and start to paint on it with any Gimp paint tool. The mask is coded in gray tones, so you must use white or gray to decrease the area limited by the mask and black to increase it. The area painted in light or dark gray will be transition areas for the selection like feathering. When your mask is ready, click again on the bottom-left button in the image window and the quick mask will be removed from the channel list and converted to a selection. Quick mask's purpose is to paint a selection and its transitions with the paint tools without worrying about managing selection masks. It's a good way to isolate a subject in a picture because once the selection is made you only have to remove its content (or inverse if the subject is in the selection).



Using Quick Mask's

DESCRIPTION

- *. Screenshot of the image window with activated QuickMask. The QuickMask is filled with a gradient from black (left) to white (right).
- *. The QuickMask is now disabled and a selection is initialised from the QuickMask, which was filled by a gradient before. You see the selection borders in the middle of the image.
- *. A stroke is now added during the enabled selection. The key is, that the black color will have no opacity of the resulting stroke (right) and white color will have a full opacity of the stroke (left).

After the QuickMask Button is pressed, the command generates a temporary 8-bit (0-255) channel, on which the progressive selection work is stored. If a selection is already present the mask is initialized with the content of the selection. Once QuickMask has been activated, the image is covered by a red semi-transparent veil. This one represents the non-selected pixels. Any **paint tool** can be used to create the selection on the QuickMask. They should use only greyscale color, conforming the channel

properties, while enabling to define the future selected place. The selection will be displayed as soon as the QuickMask will be toggled but its temporary channel will not be available anymore.

TIP



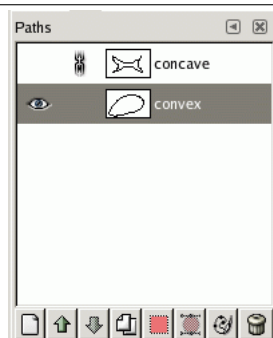
To save in a channel the selection done with the Quickmask select in the image menu **Select/Save to Channel**

Usage

1. **Open** an image or begin a **new document**.
2. Activate the Quickmask using the left-bottom button in the image window. If a selection is present the mask is initialized with the content of the selection.
3. Choose a **drawing tool** and use it with greyscale colors on the QuickMask.
4. Deactivate the Quickmask using the left-bottom button in the image window.

9.2.3. Path dialog

Figure 9.12. The Paths dialog



The Paths dialog is used to manage paths, allowing you to create or delete them, save them, convert them to and from selections, etc.

The Paths dialog is a dockable dialog; see the section on **Dialogs and Docking** for help on manipulating it. It can be activated in several ways:

9.2.3.1. Dialog call

- From the Toolbox menu: **File** → **Dialogs** → **Paths**.
- From the Toolbox menu: **File** → **Dialogs** → **Create New Dock** → **Layers, Channels, and Paths**. This gives you a dock containing three dialogs, with the Paths dialog one of them.
- From an image menu: **Dialogs** → **Paths**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Paths**.

9.2.3.2. Using the Paths dialog

Each path belongs to one image: paths are components of images just like layers. The Paths dialog shows you a list of all paths belonging to the currently active image: switching images causes the dialog to show a different list of paths. If the Paths dialog is embedded in a “Layers, Channels, and Paths” dock, you can see the name of the active image in the Image Menu at the top of the dock. (Otherwise, you can add an Image Menu to the dock by choosing “Show Image Menu” from the Tab menu.)

If you are familiar with the Layers dialog, you have a head start, because the Paths dialog is in several ways similar. It shows a list of all paths that exist in the image, with four items for each path:

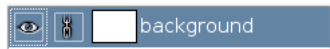


Path visibility An “open eye” icon if the path is visible, or a blank space if it is not. “Visible” means that a trace of the path is drawn on the image display. The path is not actually shown in the image pixel data unless it has been stroked or otherwise rendered. Clicking in the eye-symbol-space toggles the visibility of the path.



chain paths A “chain” symbol is shown to the right of the eye-symbol-space if the path is transform-locked, or a blank space if it is not. “Transform-locked” means that it forms part of a set of elements (layers, channels, etc) that are all affected in the same way by transformations (scaling, rotation, etc) applied to any one of them. Clicking in the chain-symbol-space toggles the transform-lock status of the path.

Preview image A small preview-icon showing a sketch of the path. If you click on the icon and drag it into an image, this will create a copy of the path in that image.



path name The name of the path, which must be unique within the image.

Double-clicking on the name will allow you to edit it. If the name you create already exists, a number will be appended (e.g., “#1”) to make it unique.

If the list is non-empty, at any given moment one of the members is the image’s *active path*, which will be the subject of any operations you perform using the dialog menu or the buttons at the bottom: the active path is shown highlighted in the list. Clicking on any of the entries will make it the active path.

Right-clicking on any entry in the list brings up the **Paths Menu**. You can also access the Paths Menu from the dialog Tab menu.

9.2.3.3. Buttons

The buttons at the bottom of the Paths dialog all correspond to entries in the Paths menu (accessed by right-clicking on a path list entry), but some of them have extra options obtainable by holding down modifier keys while you press the button.

New Path See **New Path**. Holding down the **Shift** key brings up a dialog that allows you to assign a name to the new (empty) path.

Raise Path See **Raise Path**.

Lower Path See **Lower Path**.

Duplicate Path See **Duplicate Path**.

Path to Selection Converts the path into a selection; see [Path to Selection](#) for a full explanation. You can use modifier keys to set the way the new selection interacts with the existing selection: *Modifiers: None Action: Replace existing selection*
Modifiers: Shift Action: Add to selection
Modifiers: Ctrl Action: Subtract from selection
Modifiers: Shift+Ctrl Action: Intersect with selection.

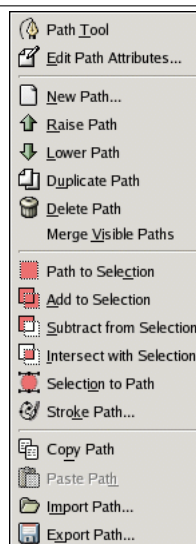
Selection to Path Holding down the **Shift** key brings up the **Advanced Options** dialog, which probably is only useful to GIMP developers.

Stroke Path See [Stroke Path](#).

Delete Path **Delete Path** deletes the current selected path.

9.2.3.4. Paths Menu

Figure 9.13. The Paths dialog menu



The Paths menu can be brought up by right-clicking on a path entry in the list in the Paths dialog, or by choosing the top entry ("Paths Menu") from the Paths dialog Tab menu. This menu gives you access to most of the operations that affect paths.

Path Tool **Path Tool** is an alternative way to activate the [Path tool](#), used for creating and manipulating paths. It can also be activated from the Toolbox, or by using the keyboard shortcut **B** (for *Bezier*).

Edit Path Attributes **Edit Path Attributes** brings up a small dialog that allows you to change the name of the path. You can also do this by double-clicking on the name in the list in the Paths dialog.

New Path **New Path** creates a new path, adds it to the list in the Paths dialog, and makes it the active path for the image. It brings up a dialog that allows you to give a name to the path. The new path is created with no anchor points, so you will need to use the Path tool to give it some before you can use it for anything.

Raise Path **Raise Path** moves the path one slot higher in the list in the Paths dialog. The position of a path in the list has no functional significance, so this is simply a convenience to help you keep things organized.

Lower Path **Lower Path** moves the path one slot lower in the list in the Paths dialog. The position of a path in the list has no functional significance, so this is simply a convenience to help you keep things organized.

Duplicate Path "Duplicate Path" creates a copy of the active path, assigns it a unique name, adds it to the list in the Paths dialog, and makes it the active path for the image. The copy will be visible only if the original path was visible.

NOTE



Note that copying a visible path will make the path "disappear" from the image display: this happens because paths are drawn in XOR mode, which has the curious property that drawing an item twice "undraws" it. The paths are still there even though you don't see anything: if you move one of them, you will be able to see both.

Delete Path **Delete Path** deletes the current selected path.

Merge Visible Paths **Merge Visible Paths** takes all the paths in the image that are visible (that is, all that show "open eye" symbols in the Paths dialog), and turns them into components of a single path. This may be convenient if you want to stroke them all in the same way, etc.

Path to Selection; Add to Selection; Subtract from Selection; Intersect with Selection These commands all convert the active path into a selection, and then combine it with the existing selection in the specified ways. ("Path to Selection" discards the existing selection and replaces it with one formed from the path.) If necessary, any unclosed components of the path are closed by connecting the last anchor point to the first anchor point with a straight line. The "marching ants" for the resulting selection should closely follow the path, but don't expect the correspondence to be perfect.

Selection to Path This operation can be accessed in several ways:

- From an image menubar, as **Select → To Path**
- From the Paths dialog menu, as **Selection to Path**.
- From the **Selection to Path** button at the bottom of the Paths dialog.
- From the **Selection to Path** button in the Tool Options for the Path tool.

Selection to Path creates a new path from the image's selection. In most cases the resulting path will closely follow the "marching ants" of the selection, but the correspondence will not usually be perfect.

Converting a two-dimensional selection mask into a one-dimensional path involves some rather tricky algorithms: you can alter the way it is done using the **Advanced Options**, which are accessed by holding down the **Shift** key while pressing the **Selection to Path** button at the bottom of the Paths dialog. This brings up the Advanced Options dialog, which allows you to set 20 different options and variables, all with cryptic names. The Advanced Options are really intended

for developers only, and help with them goes beyond the scope of this documentation. Generally speaking, **Selection to Path** will do what you expect it to, and you don't need to worry about how it is done (unless you want to).

Stroke Path This operation can be accessed in several ways:

- From an image menubar, as **Edit** → **Stroke Path**
- From the Paths dialog menu, as **Stroke Path**.
- From the **Stroke Path** button at the bottom of the Paths dialog.
- From the **Stroke Path** button in the Tool Options for the Path tool.

“Stroke Path” renders the active path on the active layer of the image, permitting a wide variety of line styles and stroking options. See the section on **Stroking** for more information.

Copy Path Copy Path copies the active path to the Paths Clipboard, enabling you to paste it into a different image.

TIP



You can also copy and paste a path by dragging its icon from the Paths dialog into the target image's display.

Paste Path Paste Path creates a new path from the contents of the Path Clipboard, adds it to the list in the Paths dialog, and makes it the active path for the image. If no path has previously been copied into the clipboard, the menu entry will be insensitive.

Import Path “Import Path” creates a new path from an SVG file: it pops up a file chooser dialog that allows you to navigate to the file. See the **Paths** section for information on SVG files and how they relate to GIMP paths.

Export Path Export Path allows you to save a path to a file: it pops up a file save dialog that allows you to specify the file name and location. You can later add this path to any GIMP image using the **Import Path** command. The format used for saving paths is SVG: this means that vector-graphics programs such as Sodipodi or Inkscape will also be able to import the paths you save. See the **Paths** section for more information on SVG files and how they relate to GIMP paths.

9.2.4. Colormap dialog

The Colormap (Indexed Palette is a better name) dialog allows you to edit the colormap of an indexed image. (If the mode of the active image is RGB or Grayscale instead of Indexed, the dialog is empty and unusable.) This is a dockable dialog; see the section on **Dialogs and Docking** for help on manipulating it. It can be activated in two ways:

9.2.4.1. Dialog call

- From the Toolbox menu: **File** → **Dialogs** → **Colormap**
- From the image menu: **Dialogs** → **Colormap**

Figure 9.14. The Colormap dialog

9.2.4.2. Colormaps and Indexed Images

In an Indexed image, colors are assigned to pixels by an indirect method, using a lookup table called a *colormap*. In GIMP, the maximum number of entries in a colormap is 256. For a maximum-sized colormap, each index from 0 to 255 is assigned an arbitrary RGB color. There are no rules restricting the colors that can be assigned to an index or the order they appear in: any index can be assigned any color.

In an Indexed image, instead of being assigned a color directly (as happens in RGB and Grayscale images), each pixel is assigned an index. To determine the color that should be shown for that pixel, GIMP looks up the index in the image's colormap. Each indexed image has its own private colormap.

It is important to realize that the colors in the colormap are the *only colors available* for an indexed image (that is, unless you add new colors to the colormap). This has a major effect on many gimp operations: for example, in a pattern fill, GIMP will usually not be able to find exactly the right colors in the colormap, so it will approximate them by **Dithering**. If the colormap is too limited or poorly chosen, this can easily produce very poor image quality.

The Colormap dialog allows you to alter the colormap for an image, either by creating new entries, or by changing the colors for the existing entries. If you change the color associated with a given index, you will see the changes reflected throughout the image, as a color shift for all pixels that are assigned that index. The entries are numbered with 0 in the upper left corner, 1 to its right, etc.

9.2.4.3. Using the Colormap dialog

Here are the operations you can perform using this dialog:

Click on a color entry This sets GIMP's foreground color to the color you click on, as shown in the Toolbox color area. As a result, this color will be used for the next painting operation you do.

Ctrl-click on a color entry This sets GIMP's background color to the color you Ctrl-click on, as shown in the Toolbox color area.

Double-click on a color entry This sets GIMP's foreground color to the color you click on, and also brings up a Color Editor that allows you to change that colormap entry to a new color.

Color index You can select a different colormap entry by typing its index here, or clicking the spinbutton to the right.

Hex triplet This area shows a hex-code representation (such as is used in HTML) for the color assigned to the currently selected colormap entry. You can edit the color here, instead of using a Color Editor, if you want to. See **HexTriplet**

Edit color This button (in the lower left corner of the dialog) brings up a Color Editor that allows you to change the color for the currently selected colormap entry. The effect is similar to double-clicking on the entry, except that it does not set GIMP's foreground color.

Add color This button (in the lower right corner of the dialog) allows you to add new colors to the colormap. If you click on the button, the current foreground color, as shown in the Toolbox, will be tacked on to the end of the colormap. If instead you hold down **Ctrl** and click, the background color from the Toolbox will be added. (If the colormap contains 256 entries, it is full, and trying to add more will have no effect.)

TIP



If you make a mistake, you can undo it by focusing the pointer in the image whose colormap you have changed, and then pressing **Ctrl-Z** or choosing **Edit** → **Undo** in the image menu.

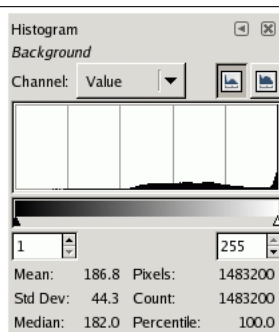
NOTE



This dialog provides the most commonly used methods for altering the colormap for an indexed image. The color tools, such as Brightness/Contrast, Hue/Saturation, etc, do not operate on indexed images. There are a few plug-ins that do so, including the "Normalize", "Color Enhance", and "Stretch Contrast" operations, and it is possible to create others as well.

9.2.5. Histogram dialog

Figure 9.15. The Histogram dialog



The Histogram dialog shows you information about the statistical distribution of color values in the image that is currently active. This information is often useful when you are trying to *color balance* an image. However, the Histogram dialog is purely informational: nothing you do with it will cause any change to the image. If you want to perform a histogram-based color correction, use the **Levels** tool.

9.2.5.1. Dialog call

This is a dockable dialog; see the section on **Dialogs and Docking** for help on manipulating it. It can be activated in two ways:

- From the Toolbox menu: **File** → **Dialogs** → **Histogram**
- From the image menu: **Dialogs** → **Histogram**

9.2.5.2. About Histograms

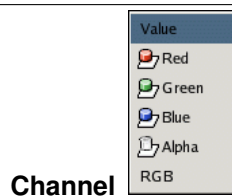
In GIMP, each layer of an image can be decomposed into one or more color channels: for an RGB image, into R, G, and B channels; for a grayscale image, into a single Value channel. Layers that support transparency have an additional channel, the alpha channel. Each channel supports a range of intensity levels from 0 to 255 (integer valued). Thus, a black pixel is encoded by 0 on all color channels; a white pixel by 255 on all color channels. A transparent pixel is encoded by 0 on the alpha channel; an opaque pixel by 255.

For RGB images, it is convenient to define a Value “pseudochannel”. This is not a real color channel: it does not reflect any information stored directly in the image. Instead, the Value at a pixel is given by the equation $V = \max(R, G, B)$. Essentially, the Value is what you would get at that pixel if you converted the image to Grayscale mode.

For more information on channels, please consult the [Working with Images](#) section.

9.2.5.3. Using the Histogram dialog

Figure 9.16. Channel options for an RGB layer with alpha channel.



This allows you to select which channel to use. The possibilities depend on the layer type of the active layer. Here are the entries you might see, and what they mean:

Value For RGB and Grayscale images, this shows the distribution of brightness values across the layer. For a grayscale image, these are read directly from the image data. For an RGB image, they are taken from the Value pseudochannel.

For an indexed image, the “Value” channel actually shows the distribution of frequencies for each colormap index: thus, it is a “pseudocolor” histogram rather than a true color histogram.

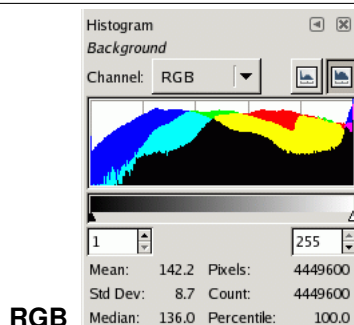
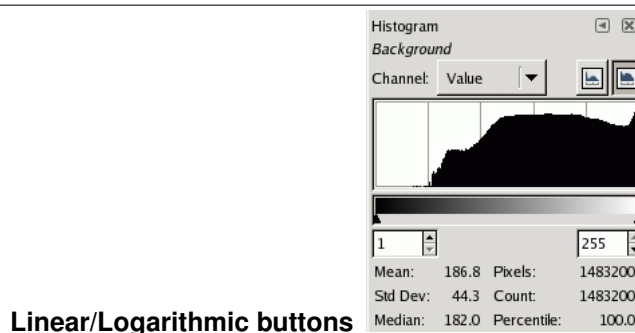
Red, Green, Blue These only appear for layers from RGB images. They show the distribution of intensity levels for the Red, Green, or Blue channels respectively.

Alpha This shows the distribution of opacity levels. If the layer is completely opaque or completely transparent, the histogram will consist of a single bar on the left or right edge.

This entry, only available for RGB layers, shows the R, G, and B histograms superimposed, so that you can see all of the color distribution information in a single view.

These buttons determine whether the histogram will be displayed using a linear or logarithmic Y axis. For images taken from photographs, the linear mode is most commonly useful. For images that contain substantial areas of constant color, though, a linear histogram will often be dominated by a single bar, and a logarithmic histogram will often be more useful.

You can restrict the analysis, for the statistics shown at the bottom of the dialog, to a limited range of values if you wish. You can set the range in one of three ways:

Figure 9.17. Combined histograms of R, G, and B channels.**Figure 9.18.** The histogram shown at the top, changed to logarithmic mode.

- Click and drag the pointer across the histogram display area, from the lowest level to the highest level of the range you want.
- Click and drag the black or white triangles on the slider below the histogram.
- Use the spinbutton entries below the slider (left entry: bottom of range; right entry: top of range).

Statistics At the bottom of the dialog are shown some basic statistics describing the distribution of channel values, restricted to the selected range. These are the mean, standard deviation, and median of the selected histogram portion; the number of pixels in the image; the number whose values fall within the selected range; and the percentage whose values fall within the selected range.

9.2.6. Navigation Dialog

The Navigation dialog is designed to offer easy movement around the active image if the zoom is set higher than what the image window can display. If this is the case, there is an inversely colored rectangle

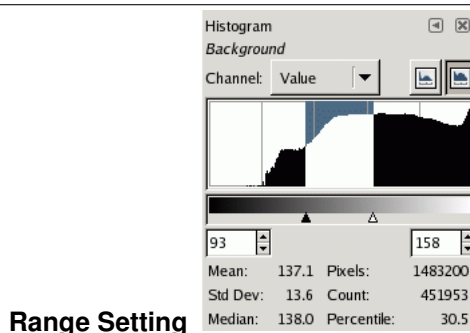
Figure 9.19. Dialog aspect after range fixing.


Figure 9.20. Navigation Dialog

that shows the location of the current view area in respect to the image. This rectangular outline can be dragged to change the viewing region.

9.2.6.1. Activate the dialog

The Navigation window dialog can be called in many ways :

- from the toolbox-menu: **File/ Dialogs/ Navigation**
- from the image-menu: **Dialogs/ Navigation**
- from the image-menu: **View/ Navigation window**, the **Shift+Ctrl+N** will call the Navigation Window.
- from another dialog-menu: **Add Tab/ Navigation**

You can access more quickly to it (but without the zoom functions) by clicking on the  icon, at the right bottom corner of the image window.

9.2.6.2. Using the Navigation Dialog

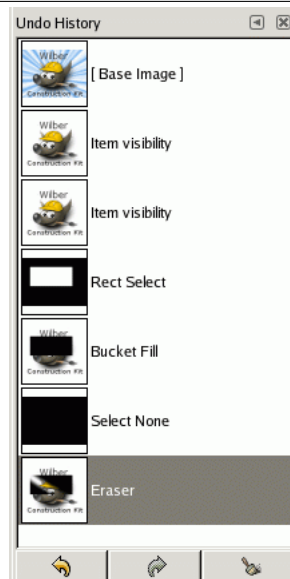
The slider It allows easy zoom level control, more precise than with the **Zoom** command.

The buttons

- *Zoom Out*, *Zoom In* and *Zoom 1:1* are self explanatory.
- *Zoom Fit to Window*: After zooming, this button allows to return to the normal size.
- *Shrink Wrap*: The whole zoomed image will be displayed in an enlarged image window, if possible.

9.2.7. Undo History dialog

This dialog shows you a list of the actions you have most recently performed on an image, with a small sketch that attempts to illustrate the changes produced by each. You can revert the image to any point in its Undo History simply by clicking on the right entry in the list. For more information on GIMP's Undo mechanism and how it works, see the section on **Undoing**.

Figure 9.21. The Undo History dialog

9.2.7.1. Activate the dialog

The Undo History dialog is a dockable dialog; see the section on [Dialogs and Docking](#) for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Undo History**.
- From the Toolbox menu: **File** → **Dialogs** → **Create New Dock** → **Layers, Channels, and Paths**. This gives you a dock containing four dialogs, with the Undo History dialog one of them.
- From an image menu: **Edit** → **Undo History**.
- From an image menu: **Dialogs** → **Undo History**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Undo History**.

9.2.7.2. Using the Undo History dialog

The most basic thing you can do is to select a point in the Undo History by clicking on it in the list. You can go back and forth between states in this way as much as you please, without losing any information or consuming any resources. In most cases, the changes are very fast.

At the bottom of the dialog are three buttons:

Undo This button has the same effect as choosing **Edit** → **Undo** from the menu, or pressing **Ctrl-Z**; it reverts the image to the next state back in the undo history.

Redo This button has the same effect as choosing **Edit** → **Redo** from the menu, or pressing **Ctrl-Y**; it advances the image to the next state forward in the undo history.

Clear Undo History This button removes all contents from the undo history except the current state. If you press it, you are asked to confirm that you really want to do this. The only reason for doing it would be if you are very constrained for memory.

Figure 9.22. Colors dialog

9.3. Image content related dialogs

9.3.1. Colors dialog

The Channel dialog lets you manage and pick up new colors. It is divided into five separate parts: GIMP, CMYK, Triangle, Watercolor and Scales. You can use the eyedropper, which is the last button of the dialog, to pick up a color anywhere on your screen.

9.3.1.1. Activate Dialog

The dialog can be called in the following ways :

- from the toolbox-menu: **File** → **Dialogs** → **Colors**
- from the toolbox: click on the current Foreground or Background color.
- from the image-menu: **Dialogs** → **Colors**
- from an other dialog-menu: **Add Tab** → **Colors**

9.3.1.2. Using the dialog

The GIMP Selector With the GIMP Color Selector, you select a color by clicking on a one-dimensional strip located at the right edge, and then in a two-dimensional area located on the left. The one-dimensional strip can encode any of the color parameters H, S, V, R, G, or B, as determined by which of the adjoining buttons is pressed. The two-dimensional area then encodes the two complementary color parameters.

CMYK You get to this selector by clicking on the printer icon. The CMYK view gives you the possibility to manage colors from the **CMYK** color model.

Triangle The Triangle selector is made up of a *chromatic circle* that allows to select Hue by click-and-drag a small circle and of a *triangle* that has also a small circle to vary intuitively Saturation and Value.

Watercolor FIXME

Scales This Scales exists only in the color selector you get from the file menu of the Tool-Box or from the Dialogs menu in the image menu bar.

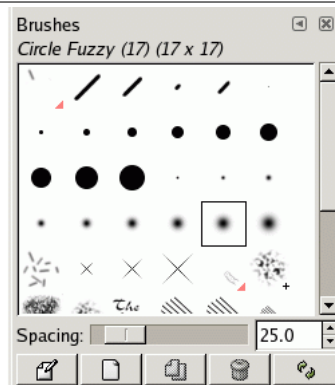
This selector displays a global view of R, G, B channels and H, S, V values, placed in sliders.

Color picker This color picker exists only in the color selector you get from the file menu of the Tool-Box or from the Dialogs menu in the image menu bar.

The color picker has a completely different behaviour, than the **color picker tool**. Instead of picking the colors from the active image, you're able to pick colors from the entire screen.

9.3.2. Brushes dialog

Figure 9.23. The Brushes dialog



The Brushes dialog is used to select a brush, for use with painting tools: see the **Brushes** section for basic information on brushes and how they are used in GIMP. The dialog also gives you access to several functions for manipulating brushes. You can select a brush by clicking on it in the list: it will then be shown in the Brush/Pattern/Gradient area of the Toolbox. A few dozen basic brushes come pre-installed with GIMP, along with a few assorted bizarre ones that mainly serve to show you the range of possibilities. You can also create custom brushes using the Brush Editor, or by saving images in a special brush file format.

9.3.2.1. Activate Dialog

The Brushes dialog is a dockable dialog; see the section on **Dialogs and Docking** for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Brushes**.
- From the Toolbox menu: **File** → **Dialogs** → **Create New Dock** → **Brushes, Patterns, and Gradients**. This gives you a dock containing three dialogs, with the Brushes dialog one of them.
- From the Toolbox, by clicking on the brush symbol in the Brush/Pattern/Gradient area.
- From an image menu: **Dialogs** → **Brushes**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Brushes**.
- From the Tool Options dialog for any of the paint tools, by clicking on the Brush icon button. Note that, depending on your Preferences, a brush selected in this way may only apply to the currently active tool, not to other paint tools. See the **Tool Option Preferences** section for more information.

9.3.2.2. Using the brush dialog

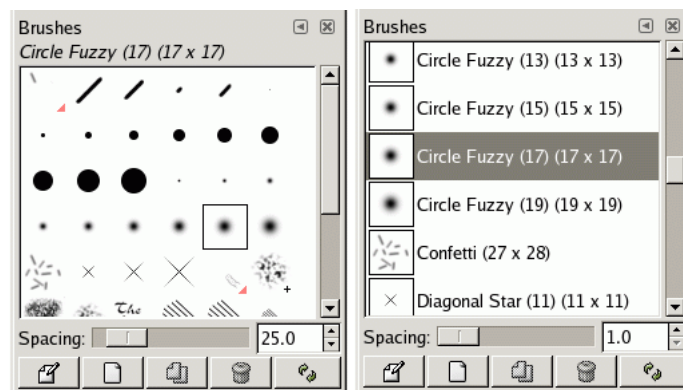
Grid/List modes In the Tab menu, you can choose between **View as Grid** and **View as List**. In Grid mode, the brush shapes are laid out in a rectangular array, making it easy to see many at once and find the one you are looking for. In List mode, the shapes are lined up in a list, with the names beside them.

NOTE



In the Tab menu, the option **Preview Size** allows you to adapt the size of brush previews to your liking.

Figure 9.24. The Brushes dialog



(a) The Brushes dialog (Grid mode) (b) The Brushes dialog (List view)

Grid mode At the top of the dialog appears the name of the currently selected brush, and its size in pixels.

In the center a grid view of all available brushes appears, with the currently selected one outlined. If you see a little "+" to the right of a brush, it means the brush is actually larger than it appears. If you see a little red triangle, it means the brush is an animated brush, also known as an "image hose". Clicking on a brush causes it to be selected as GIMP's current brush. Double-clicking activates the Brush Editor.

List mode For the most part, the dialog works the same way in List mode as in Grid mode, with one exception:

If you *double-click* on the name of a brush, you will be able to edit it. Note, however, that you are only allowed to change the names of brushes that you have created or installed yourself, not the ones that come pre-installed with GIMP. If you try to rename a pre-installed brush, you will be able to edit the name, but as soon as you hit return or click somewhere else, the name will revert to its original value. It is a general rule that you cannot alter the resources that GIMP pre-installs for you: brushes, patterns, gradients, etc; only ones that you create yourself.

Spacing Below the grid appears a scale entry for "Spacing", which is the distance between consecutive brush marks when you trace out a brushstroke with the pointer.

Edit Brush This activates the **Brush Editor**. Pressing the button will open the Editor for any brush. It only works, however, for parametric brushes: for any other type, the Editor will show you the brush but not allow you to do anything with it.

New Brush This creates a new parametric brush, initializes it with a small fuzzy round shape, and opens the Brush Editor so that you can modify it. The new brush is automatically saved in your personal brushes folder.

Duplicate Brush This button is only enabled if the currently selected brush is a parametric brush. If so, the brush is duplicated, and the Brush Editor is opened so that you can modify the copy. The result is automatically saved in your personal `brushes` folder.

Delete Brush This removes all traces of the brush, both from the dialog and the folder where its file is stored, if you have permission to do so. It asks for confirmation before doing anything.

Refresh Brushes If you add brushes to your personal `brushes` folder or any other folder in your brush search path, by some means other than the Brush Editor, this button causes the list to be reloaded, so that the new entries will be available in the dialog.

The functions performed by these buttons can also be accessed from the dialog pop-up menu, activated by right-clicking anywhere in the brush grid/list, or by choosing the top item, **Brushes menu**, from the dialog Tab menu.

9.3.2.3. Brush Editor

The Brush Editor allows you either to view the brush parameters of a brush supplied by GIMP, and you can't change them, or to create a custom brush from a geometrical shape, a circle, a square, a diamond. This editor has several elements:

The dialog bar: As with all dialog windows, a click on the small triangle prompts a menu allowing you to set the aspect of the Brush Editor.

The title bar: To give a name to your brush.

The preview area: Brush changes appear in real time in this preview.

Settings:

Shape A circle, a square and a diamond are available. You will modify them by using the following options.

Radius Distance between brush center and edge, in the width direction. A square with a 10 pixels radius will have a 20 pixels side. A diamond with a 5 pixels radius will have a 10 pixels width.

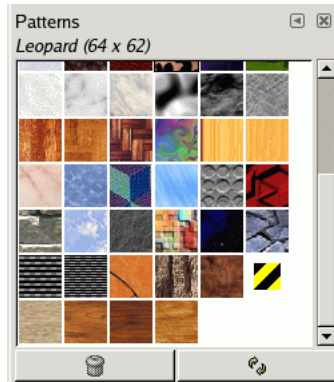
Spikes This parameter is useful only for square and diamond. With a square, increasing spikes results in a polygon. With a diamond, you get a star.

Hardness This parameter controls the feathering of the brush border. Value = 1.00 gives a brush with a sharp border (0.00-1.00).

Aspect ratio This parameter controls the brush Width/Height ratio. A diamond with a 5 pixels radius and an Aspect Ratio = 2, will be flattened with a 10 pixels width and a 5 pixels height (1.0-20.0).

Angle This angle is the angle between the brush width direction, which is normally horizontal, and the horizontal direction, counter-clock-wise. When this value increases, the brush width turns counter-clock-wise (0° to 180°).

Spacing When the brush draws a line, it actually stamps the brush icon repeatedly. If brush stamps are very close, you get the impression of a solid line: you get that with Spacing = 1. (1.00 to 200.0).

Figure 9.25. The Patterns dialog

9.3.3. Patterns dialog

In GIMP, a *pattern* is a small image used to fill areas by placing copies of side by side. See the [Patterns](#) section for basic information on patterns and how they can be created and used.

You can use them with [Bucket Fill](#) et [Clone](#) tools and the [Fill with pattern](#) command.

The Patterns dialog is used to select a pattern, by clicking on it in a list or grid view: the selected pattern will then be shown in the Brush/Pattern/Gradient area of the Toolbox. A few dozen more or less randomly chosen patterns are supplied with GIMP, and you can easily add new patterns of your own.

9.3.3.1. Activate Dialog

The Patterns dialog is a dockable dialog; see the section on [Dialogs and Docking](#) for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Patterns**.
- From the Toolbox menu: **File** → **Dialogs** → **Create New Dock** → **Brushes, Patterns, and Gradients**. This gives you a dock containing three dialogs, with the Patterns dialog one of them.
- From the Toolbox, by clicking on the pattern symbol in the Brush/Pattern/Gradient area.
- From an image menu: **Dialogs** → **Patterns**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Patterns**.
- From the Tool Options dialog for the [Clone tool](#), by clicking on the Pattern icon button. This option appears because the Clone tool is capable of painting with patterns.

9.3.3.2. Using the pattern dialog

Grid/List modes In the Tab menu, you can choose between **View as Grid** and **View as List**. In Grid mode, the patterns are laid out in a rectangular array, making it easy to see many at once and find the one you are looking for. In List mode, the patterns are lined up in a list, with the names beside them.

TIP



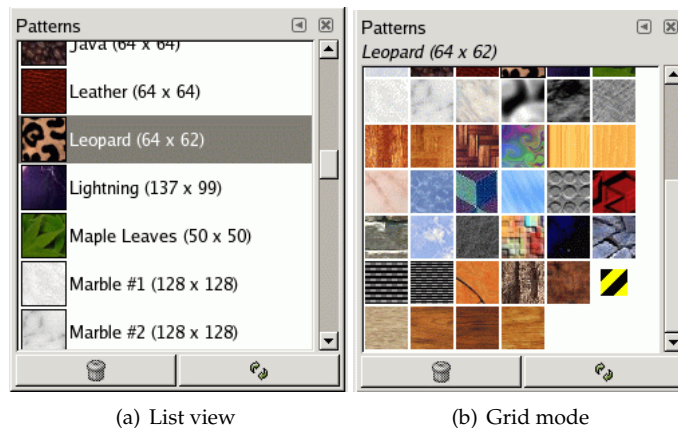
Independent of the real size of a pattern all patterns are shown the same size in the dialog. So for larger patterns this means that you see only a small portion of the pattern in the dialog at all - no matter whether you view the dialog in the list or the grid view. To see the full pattern you simply click on the pattern *and hold the mouse button* for a second.

NOTE



In the Tab menu, the option **Preview Size** allows you to adapt the size of pattern previews to your liking.

Figure 9.26. The Patterns dialog



(a) List view

(b) Grid mode

Using the Patterns dialog (Grid mode) At the top appears the name of the currently selected patterns, and its dimensions in pixels.

In the center appears a grid view of all available patterns, with the currently selected one outlined. Clicking on one of them sets it as GIMP's current pattern, and causes it to appear in the Brush/Pattern/Gradient area of the Toolbox.

Using the Patterns dialog (List view) In this view, instead of a grid, you see a list of patterns, each labeled with its name and size. Clicking on a row in the list sets that pattern as GIMP's current pattern, just as it does in the grid view.

If you *double-click* on the name of a pattern, you will be able to edit the name. Note that you are only allowed to rename patterns that you have added yourself, not the ones that are supplied with GIMP. If you edit a name that you don't have permission to change, as soon as you hit return or move to a different control, the name will revert back to its previous value.

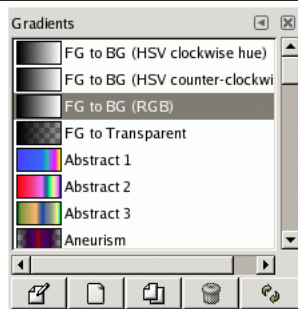
Everything else in the List view works the same way as it does in the Grid view.

Delete Pattern Pressing this button removes the pattern from the list and causes the file representing it to be deleted from disk. Note that you cannot remove any of the patterns that are supplied with GIMP and installed in the system `patterns` directory; you can only remove patterns that you have added to folders where you have write permission.

Refresh Patterns Pressing this button causes GIMP to rescan the folders in your pattern search path, adding any newly discovered patterns to the list. This button is useful if you add new patterns to a folder, and want to make them available without having to restart GIMP.

9.3.4. Gradients dialog

Figure 9.27. The screenshot illustrates the Gradients dialog



The Gradients dialog offers a gradient palette which is used to select a gradient – a set of colors arranged in a linear scale – for use with the **Blend tool** and numerous other operations. It also gives you access to several functions for manipulating gradients. You can select a gradient by clicking on it in the list: it will then be shown in the Brush/Pattern/Gradient area of the Toolbox. A few dozen nice gradients come pre-installed with GIMP. You can create more using the **Gradient Editor**. General information about gradients and how they are used in GIMP can be found in the **Gradients** section.

The first four gradients are particular: they reproduce the gradient between Foreground and background colors of toolbox in different ways.

9.3.4.1. Activate Dialog

The Gradients dialog is a dockable dialog; see the section on **Dialogs and Docking** for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Gradients**.
- From the Toolbox menu: **File** → **Dialogs** → **Create New Dock** → **Brushes, Patterns, and Gradients**. This gives you a dock containing three dialogs, with the Gradients dialog one of them.
- From the Toolbox, by clicking on the current gradient in the Brush/Pattern/Gradient area.
- From an image menu: **Dialogs** → **Gradients**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Gradients**.
- From the image by using the **G** shortcut.

9.3.4.2. Using the Gradients dialog

The most basic, and most commonly used, operation with the dialog is simply to click on one of the gradients in the scrollable list, in order to make it GIMP's current gradient, which will then be used by any operation that involves a gradient.

If you *double-click* on a gradient, you open the Gradient Editor where you will be able to edit its name. Note, however, that you are only allowed to change the names of gradients that you have created yourself, not the ones that come pre-installed with GIMP. If you try to rename a pre-installed gradient, you will be able to edit the name, but as soon as you hit return or click somewhere else, the name will revert to its original value. It is a general rule that you cannot alter the resources that GIMP pre-installs for you: brushes, patterns, gradients, etc; only ones that you create yourself.

Grid/List modes In the Tab menu, you can choose between **View as Grid** and **View as List**. In Grid mode, the gradients are laid out in a rectangular array. They look quite dazzling when viewed this way, but it is not very easy to pick the one you want, because of visual interference from the neighboring ones. In List mode, the more usable default, the gradients are lined up vertically, with each row showing its name.

NOTE



In the Tab menu, the option **Preview Size** allows you to adapt the size of gradient previews to your liking.

The buttons at the bottom of the dialog allow you to operate on gradients in several ways:

Edit Gradient This button activates the **Gradient Editor**.

New Gradient This creates a new gradient, initialized as a simple grayscale, and activates the Gradient Editor so that you can alter it. Gradients that you create are automatically saved in the `gradients` folder of your personal GIMP directory, from which they are automatically loaded when GIMP starts. (You can change this folder, or add new ones, using the Preferences dialog.)

Duplicate Gradient This creates a copy of the currently selected gradient. You will be able to edit the copy even if you cannot edit the original.

Delete Gradient This removes all traces of the gradient, if you have permission to do so. It asks for confirmation before doing anything.

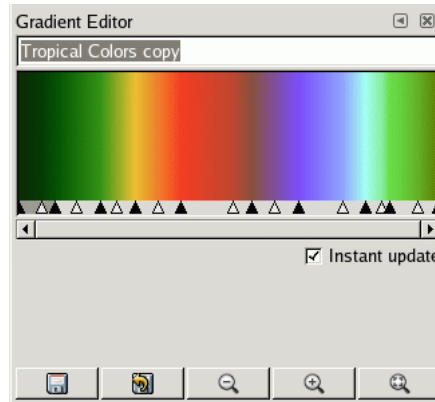
Refresh Gradients If you add gradients to your personal `gradients` folder by some means other than this dialog, this button causes the list to be reloaded, so that the new entries will be available.

The functions performed by these buttons can also be accessed from the dialog pop-up menu, activated by right-clicking anywhere in the gradient list. The menu also gives you one additional function:

Save as POV-Ray... This allows you to save the gradient in the format used by the POV-Ray 3D ray-tracing program.

9.3.4.3. Gradient Editor

The Gradient Editor allows you to edit the colors in a gradient. It can only be used on gradients you have created yourself (or on a copy of a system gradient), not on system gradients that come pre-installed with GIMP. This is a sophisticated tool that may take a bit of effort to understand. The concept behind it is that a gradient can be decomposed into a series of adjoining *segments*, with each segment consisting of a smooth transition from the color on the left edge to the color on the right edge. The Gradient Editor allows you to pack together any number of segments, with any colors you want for the left and right edges of each segment, and with several options for the shape of the transition from left to right.

Figure 9.28. The gradient editor

How to Activate the Gradient Editor You can activate the Gradient Editor in several ways:

- By double-clicking on the gradient stripe in the Gradient dialog.
- From the context menu you get by right clicking on the selected gradient name.
- By clicking on the **Edit gradient** button in the Gradient Dialog.
- From the Gradient Menu you get by clicking on the small triangle representing the Tab Menu in the Gradient Dialog.

Display

Name In the name area, you have the tab menu button (the small triangle) which opens a menu where you find the Gradient Editor Menu.

Gradient Display Below the name, you see the current result of your work if the **Instant update** option is checked; else, changes will appear only when you release the mouse button.

If you simply move the mouse pointer on this display, it works somewhat as a color-picker. Values of the pointed pixel are displayed in a rather odd way. *Position* is a number given to 3 decimal places, from 0.000 on the left to 1.000 on the right of the whole gradient. *RGB*, *HSV*, *Intensity* and *Opacity* are also a ratio...

If you click-n-drag on display, then only position and RGB data are displayed. But they are passed on to the Foreground color in Toolbox and to the four first gradients of the palette.

Range Selection/Control Sliders Below the gradient display, you see a set of black and white triangles lined up in row. A *segment* is the space between two consecutive *black* triangles. Inside each segment is a white triangle, which is used to “warp” the colors in the segment, in the same way that the middle slider in the Levels tool warps the colors there. You can select a segment by clicking between the two black triangles that define it. You can select a range of segments by shift-clicking on them. The selected range always consists of a set of *consecutive* segments, so if you skip over any when shift-clicking, they will be included automatically. If “Instant update” is checked, the display is updated immediately after any slider movement; if it is unchecked, updates only occur when you release the mouse button.

You can move sliders, segments and selections. If you simply *click-n-drag a slider*, you only move the corresponding transition. By *Click-n-drag on a segment* you can move this segment up to the next triangle. By *Shift+click-n-drag on a segment/selection*, you can move this segment/selection and compress/ dilate next segments.

Scrollbar Below the sliders is a scrollbar. This only comes into play if you zoom in using the buttons at the bottom.

Feedback Area Below the sliders is an area that initially is blank, but depending on your actions, helpful hints or feedback messages may appear here.

Buttons At the bottom of the dialog appear five buttons:

Save Clicking this button causes the gradient, in its current state, to be saved in your personal `gradients` folder, so that it will automatically be loaded the next time you start GIMP.

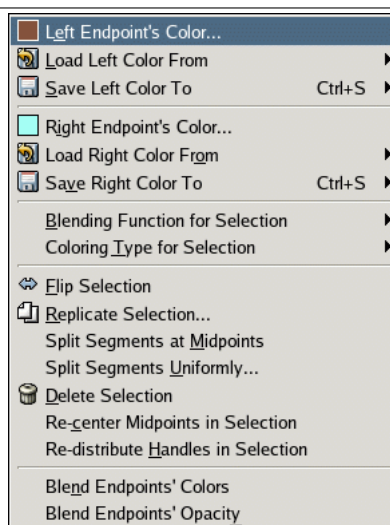
Revert Clicking this button undoes all of your editing. (However, at the time this is being written, this function is not yet implemented.)

Zoom Out Clicking this button shrinks the gradient display horizontally.

Zoom In Clicking this button expands the gradient display horizontally. You can then use the scrollbar to pan the display left or right.

Zoom All Clicking this button resizes the display horizontally so that it fits precisely into the window.

Figure 9.29. The Gradient Editor menu

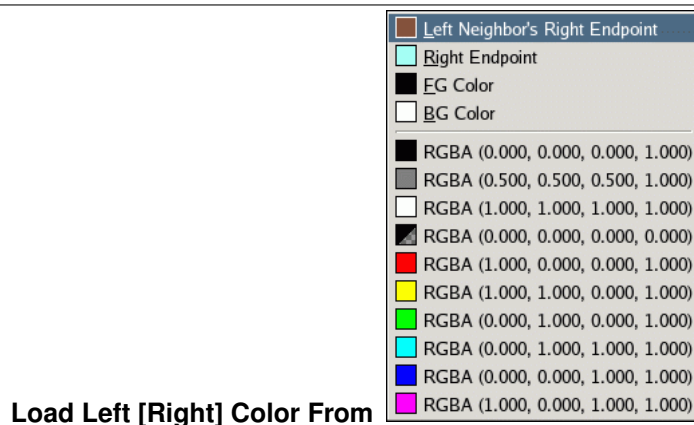


Gradient Editor Menu You can access the Gradient Editor menu either by right-clicking on the gradient display, or by choosing the top item in the dialog's tab menu. The menu allows you to set the left and right edge colors for each segment, and control the transition from one color to the other.

The following commands can be found in the menu:

Left [Right] Endpoint's Color These options allow you to choose a color for the respective endpoint using a Color Editor.

These options give you a number of alternative ways of assigning colors to the endpoints. From the submenu you can choose (assuming we're dealing with the left endpoint):

Figure 9.30. The "Load Color From" submenu

Left Neighbor's Right Endpoint This choice will cause the color of the right endpoint of the segment neighboring on the left to be assigned to the left endpoint of the selected range.

Right Endpoint This choice will cause the color of the right endpoint of the selected range to be assigned to the left endpoint.

FG/BG color These choice cause GIMP's current foreground or background color, as shown in the Toolbox, to be assigned to the endpoint.

RGBA slots At the bottom of the menu are 10 "memory slots". You can assign colors to them using the "Save" menu option described below. If you choose one of the slots, the color in it will be assigned to the endpoint.

Save Left [Right] Color To These options cause the color of the endpoint in question to be assigned to the "memory slot" selected from the submenu.

Figure 9.31. The Blending Function submenu

This option determines the course of the transition from one endpoint of the range (segment or selection) to the other, by fitting the specified type of function to the endpoints and midpoint of the range:

Linear Default option. Color varies linearly from one endpoint of the range to the other.

Curved Gradient varies more quickly on ends of the range than on its middle.

Sinusoidal The opposite of the curved type. Gradients varies more quickly on center of the range than on its ends.

Spherical (increasing) Gradient varies more quickly on the left of the range than on its right.

Spherical (decreasing) Gradient varies more quickly on the right than on the left.

Figure 9.32. The Coloring Type submenu



This option gives you additional control of the type of transition from one endpoint to the other: as a line either in RGB space or in HSV space.

Flip Segment/Selection This option does a right-to-left flip of the selected range (segment or selection), flipping all colors and endpoint locations.

Replicate Segment/Selection This option splits the selected range (segment or selection) into two parts, each of which is a perfect compressed copy of the original range.

Split Segments at Midpoints This option splits each segment in the selected range in into two segments, splitting at the location of the white triangle.

Split Segments Uniformly This option is similar to the previous one, but it splits each segment halfway between the endpoints, instead of at the white triangle.

Delete Selection This option deletes all segments in the selected range, (segment or selection) replacing them with a single black triangle at the center, and enlarging the segments on both sides to fill the void.

Re-center Segment's midpoint/Selection midpoints This option moves the white triangle for each segment in the selected range to a point halfway between the neighboring black triangles.

Re-distribute Handles in Segment/Selection This option causes the black and white triangles in the selected range to be shifted so that the distances from one to the next are all equal.

Blend Endpoints' Colors This option is only available if more than one segment is selected. It causes the colors at interior endpoints in the range to be averaged, so that the transition from each segment to the next is smooth.

Blend Endpoints' Opacity This option does the same thing as the previous option, but with opacity instead of color.

CAUTION



There is no "undo" available within the Gradient Editor, so be careful!

Figure 9.33. The Palettes dialog

9.3.5. Palettes

A *palette* is a set of discrete colors, in no particular order. See the [Palettes](#) section for basic information on palettes and how they can be created and used.

The Palettes dialog is used to select a palette, by clicking on it in a list or grid view. A few dozen more or less randomly chosen palettes are supplied with GIMP, and you can easily add new palettes of your own. The Palettes dialog also give you access to several operations for creating new palettes or manipulating the ones that already exist.

NOTE



The Palettes dialog is not the same thing as the [Index Palette dialog](#), which is used to manipulate the colormaps of indexed images.

9.3.5.1. Activate Dialog

The Palettes dialog is a dockable dialog; see the section on [Dialogs and Docking](#) for help on manipulating it. It can be activated in several ways:

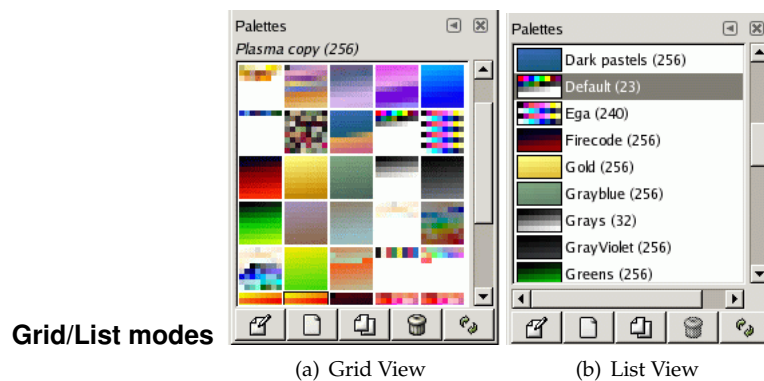
- From the Toolbox menu: **File** → **Dialogs** → **Palettes**.
- From an image menu: **Dialogs** → **Palettes**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Palettes**.

9.3.5.2. Using the Palettes dialog

Clicking on a palette in the dialog makes it GIMP's active palette. This does not really have any significance, though. Double-clicking on a palette brings up the [Palette Editor](#), which allows you to set GIMP's foreground or background colors by clicking on colors in the palette display.

Double-clicking on a palette *name* (in List View mode) lets you to edit the name. Note that you are only allowed to change the names of palettes that you have added yourself, not those that are supplied with GIMP. If you edit a name that you are not allowed to change, it will revert back to its previous value as soon as you hit return or move the pointer focus elsewhere.

In the Tab menu, you can choose between **View as Grid** and **View as List**. In Grid mode, the palettes are laid out in a spectacular rectangular array, making it easy to see many at once and find the one you are looking for. In List mode (the default), the palettes are lined up in a list, with the names beside them.

Figure 9.34. The Palettes dialog**TIP**

In the Tab menu, the option **Preview Size** allows you to adapt the size of color cell previews to your liking.

Edit Palette This button brings up the [Palette Editor](#).

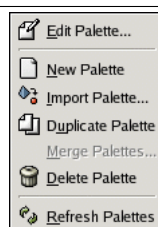
New Palette See [New Palette](#).

Duplicate Palette See [Duplicate Palette](#).

Delete Palette See [Delete Palette](#).

Refresh Palettes See [Refresh Palettes](#).

9.3.5.3. Palettes Menu

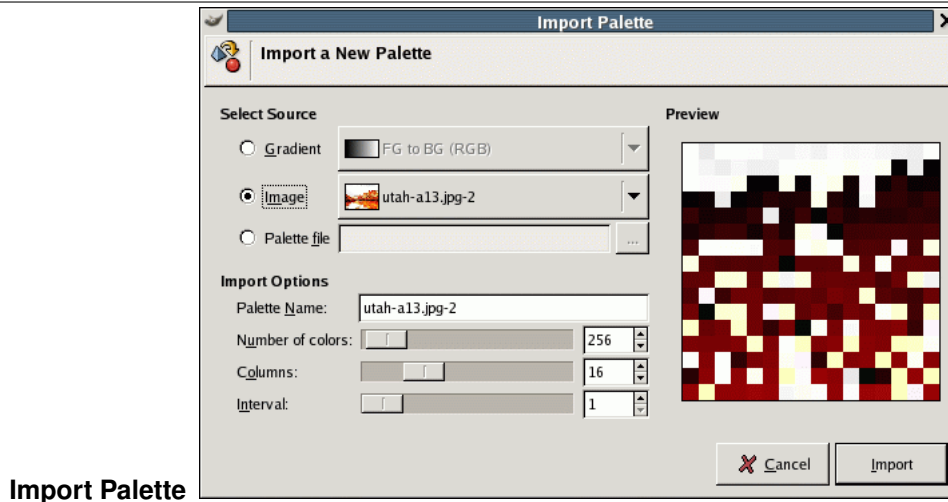
Figure 9.35. The Palettes Menu

The Palettes Menu can be accessed by right-clicking in the Palettes dialog, or by choosing the top item from the dialog Tab menu.

Edit Palette “Edit Palette” is an alternative way of activating the [Palette Editor](#): it can also be activated by double-clicking on a palette in the Palettes dialog, or by pressing the “Edit Palette” button at the bottom of the dialog.

New Palette “New Palette” creates a new, untitled palette, initially containing no color entries, and pops up the Palette Editor so that you can add colors to the palette. The result will automatically be saved in your personal `palettes` folder when you quit GIMP, so it will be available from the Palettes dialog in future sessions.

Figure 9.36. The Import Palette dialog



“Import Palette” allows you to create a new palette from the colors in a gradient, an image or a palette file. Choosing it brings up the “Import Palette” dialog, which gives you the following options:

Select Source You can import a palette either from any of GIMP’s gradients (choosing one from the adjoining menu), or from any of the currently open images (chosen from the adjoining menu). In GIMP 2.2, you can also import a RIFF palette file (with extension `.pal`), of the type used by several Microsoft Windows applications.

Palette name You can give a name to the new palette here. If the name you choose is already used by an existing palette, a unique name will be formed by appending a number (e. g., “#1”).

Number of colors Here you specify the number of colors in the palette. The default is 256, chosen for three reasons: (1) every gradient contains 256 distinct colors; (2) GIF files can use a maximum of 256 colors; (3) GIMP indexed images can contain a maximum of 256 distinct colors. You can use any number you like here, though: GIMP will try to create a palette by spacing the specified number of colors even across the color range of the gradient or image.

Columns Here you specify the number of columns for the palette. This only affects the way the palette is displayed, and has no effect on the way the palette is used.

Interval XXX I have no idea what this is.

The imported palette will be added to the Palettes dialog, and automatically saved in your personal `palettes` folder when you quit GIMP, so it will be available in future sessions.

Duplicate Palette Duplicate Palette creates a new palette by copying the palette that is currently selected, and brings up a Palette Editor so that you can alter the palette. The result will automatically be saved in your personal `palettes` folder when you quit GIMP, so it will be available from the Palettes dialog in future sessions.

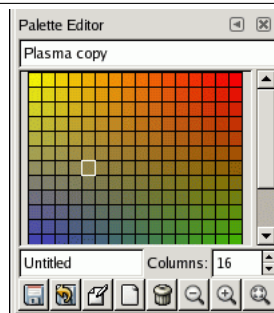
Merge Palettes Currently this operation is not implemented, and the menu entry will always be insensitive.

Delete Palette Delete Palette removes the palette from the Palettes dialog, and deletes the disk file in which it is stored. Before it acts, it asks you confirm that you really want to do these things. Note that you cannot remove any of the palettes that are supplied with GIMP, only palettes you have added yourself.

Refresh Palettes Refresh Palettes rescans all of the folders in your palette search path, and adds any newly discovered palettes to the list in the Palettes dialog. This may be useful if you obtain palette files from some external source, copy them into one of your palettes folders, and want to make them available during the current session.

9.3.5.4. Palette Editor

Figure 9.37. The Palette Editor



The Palette Editor is used mainly for two purposes: first, for setting GIMP's foreground or background colors (as shown in the Color Area of the Toolbox) to selected colors from the palette; second, for modifying the palette. You can activate the Palette Editor for any palette in the Palettes dialog, but you can only modify palettes that you have created yourself, not the palettes that are supplied when you install GIMP. (You can, however, duplicate any palette and then edit the newly created copy.) If you modify a palette, the results of your work will automatically be saved when you exit from GIMP.

How to Activate the Palette Editor The Palette Editor is only accessible from the Palettes dialog: you can activate it by double-clicking on a palette, or by pressing the "Edit Palette" button at the bottom, or by choosing "Edit Palette" from the Palettes Menu.

The Palette Editor is a dockable dialog; see the section on [Dialogs and Docking](#) for help on manipulating it.

Using the Palette Editor If you click on a color box in the palette display, GIMP's foreground color will be set to the selected color: you can see this in the Color Area of the Toolbox. If you hold down the **Ctrl** key while clicking, GIMP's background color will be set to the selected color.

Double-clicking on a color not only sets the foreground, it also brings up a color editor that allows you to modify the selected palette entry. (This only happens if the palette is one you are allowed to modify: that is, one you have added to GIMP yourself.)

Right-clicking in the palette display area brings up the Palette Editor menu. It's functions are mainly the same as those of the buttons at the bottom of the dialog.

Below the palette display area, at the left, appears a text entry area that shows the name of the selected color (or "Unnamed" if it does not have one). This information has no functional significance, and is present only to serve you as a memory aid.

To the right of the name entry is a spinbutton that allows you to set the number of columns used to display the palette. This only affects the display, not how the palette works. If the value is set to 0, a default will be used.

At the bottom of the dialog are a set of buttons, which mostly match the entries in the Palette Editor menu, accessible by right-clicking in the palette display area. Here are the buttons:

Save This button causes the palette to be saved in your personal `palettes` folder. It would be saved automatically when GIMP exits in any case, but you might want to use this button if you are concerned that GIMP might crash in the meantime.

Revert This operation has not yet been implemented.

Edit Color Pops up a color editor allowing you to alter the color. If the palette is one you aren't allowed to alter, this button will be insensitive.

New Color from FG Adds a new entry to the palette, with color taken from GIMP's foreground color, as shown in the Color Area of the Toolbox. If you hold down the **Ctrl** key when pressing this button, the new color will be taken from GIMP's background instead. If the palette is one you aren't allowed to alter, this button will be insensitive.

Delete Color Removes the selected color entry from the palette. If the palette is one you aren't allowed to alter, this button will be insensitive.

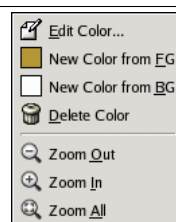
Zoom Out Expands the palette display vertically.

Zoom In Shrinks the palette display vertically.

Zoom All Fits the vertical scale of the palette display to the size of the display area.

9.3.5.5. Palette Editor Menu

Figure 9.38. The Palette Editor Menu



The Palette Editor Menu can be accessed by right-clicking on the palette display in the Palette Editor, or by choosing the top entry from the dialog Tab menu. The operations in it can also be executed using the buttons at the bottom of the Palette Editor dialog.

Edit Color "Edit Color" brings up a color editor that allows you to modify the color of the selected palette entry. If the palette is one that you are not allowed to edit (that is, one supplied by GIMP when it is installed), then the menu entry will be insensitive.

New Color from FG; New Color from BG These commands each create a new palette entry, using either GIMP's current foreground color (as shown in the Color Area of the Toolbox), or the current background color.

Delete Color "Delete Color" removes the selected color entry from the palette. If the palette is one that you are not allowed to edit, then the menu entry will be insensitive.

Zoom Out "Zoom Out" reduces the vertical scale of the entries in the palette display.

Zoom In "Zoom In" increases the vertical scale of the entries in the palette display.

Zoom All "Zoom All" adjusts the vertical size of the entries in the palette display so that the entire palette fits into the display area.

9.3.6. Fonts dialog

Figure 9.39. The Fonts dialog



The Fonts dialog is used for selecting fonts for the **Text tool**. It also allows you to refresh the list of available fonts, if you add new ones to your system while GIMP is running.

9.3.6.1. Activate Dialog

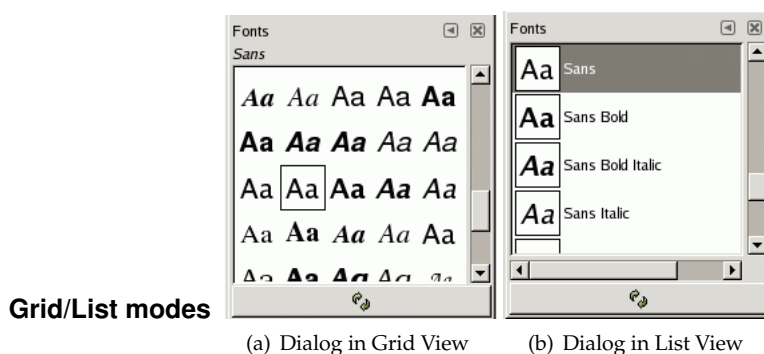
The Fonts dialog is a dockable dialog; see the section on **Dialogs and Docking** for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Fonts**.
- From the image menu bar: **Dialogs** → **Fonts**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Fonts**.
- From the Tool Options for the Text tool. If you click on the "Font" button, a Font-selector pops up. In the lower right corner is a button that, if pressed, brings up the Fonts dialog.

9.3.6.2. Using the Fonts dialog

The most basic thing you can do is to select a font by clicking on it: this font will then be used by the Text tool. If instead of clicking and releasing, you hold down the left mouse button with the pointer positioned over the font example ("Aa"), a window showing a larger text example will pop up ("Pack my box with five dozen liquor jugs.").

In the Tab menu for the Fonts dialog, you can choose between **View as Grid** and **View as List**. In Grid mode, the fonts are laid out in a rectangular array. In List mode, they are lined up vertically, with each row showing an example of the appearance of the font ("Aa"), followed by the name of the font.

Figure 9.40. The Fonts dialog

Refresh font list Pressing the button at the bottom of the dialog causes the system font list to be rescanned. This may be useful if you add new fonts while GIMP is running, and want to make them accessible for the Text tool. You can also cause the font list to be rescanned by right-clicking in the font display, and selecting "Rescan Font List" from the menu that pops up (it is actually the only option in the menu).

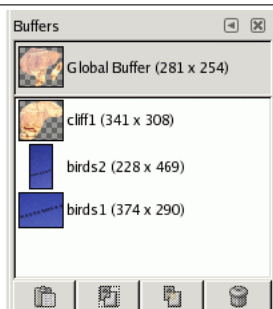
TIP



You can change the size of the font previews in the dialog using the "Preview Size" submenu of the dialog's Tab menu.

9.4. Image management related dialogs

9.4.1. Buffers dialog

Figure 9.41. The Buffers dialog

Buffers are temporary repositories for image data, created when you cut or copy part of a drawable (a layer, layer mask, etc.). You can save a document in this buffer in two ways: **Edit** → **Buffer** → **Copy Named** or **Edit** → **Buffer** → **Cut Named**. A dialog pops up asking you to name a buffer to store the data in. There is no hard limit on the number of named buffers you can create, although, of course, each one consumes a share of memory.

The Buffers dialog shows you the contents of all existing named buffers, and allows you to operate on them in several ways. It also shows you, at the top, the contents of the Global Buffer, but this is merely a display: you can't do anything with it.

The Buffers dialog is a dockable dialog; see the section on [Dialogs and Docking](#) for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Buffer**.
- From an image menu: **Dialogs** → **Buffer**, or **Edit** → **Buffer** → **Paste Named**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Buffer**.

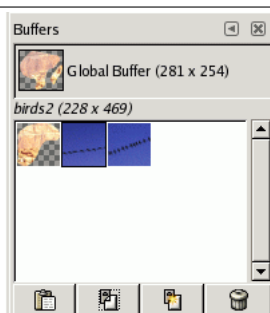
CAUTION



Named buffers are not saved across sessions. The only way to save their contents is to paste them into images.

9.5. Grid/List modes

Figure 9.42. The Buffers dialog (Grid View)



In the Tab menu for the Buffers dialog, you can choose between **View as Grid** and **View as List**. In Grid mode, the buffers are laid out in a rectangular array. In List mode, they are lined up vertically, with each row showing a preview of the contents of the buffer, its name, and its pixel dimensions.

9.6. Using the Buffers dialog

Figure 9.43. The Buffers Menu



Clicking on a buffer in the display area makes it the active buffer, i. e., the one that will be used for paste commands executed with the Buffers Menu or the buttons at the bottom of the dialog. Double-clicking on a buffer causes its contents to be pasted to the active image; this is a quick way of executing the “Paste Buffer” command.

At the bottom of the dialog are four buttons. The operations they perform can also be accessed from the Buffers Menu that you get by right clicking on the active buffer.

- **Paste Buffer.** This command pastes the contents of the selected buffer into the active image, as a floating selection. The only difference between this and the ordinary **Paste** command is that it uses the selected buffer rather than the global clipboard buffer.

- **Paste Buffer Into.** This command pastes the contents of the selected buffer into the active image's selection, as a floating selection. The only difference between this and the ordinary **Paste Into** command is that it uses the selected buffer rather than the global clipboard buffer.
- **Paste Buffer as New.** This command creates a new single-layer image out of the contents of the selected buffer. The only difference between this and the ordinary **Paste as New** command is that it uses the selected buffer rather than the global clipboard buffer.
- **Delete Buffer.** This command deletes the selected named buffer, no questions asked. You cannot delete the Global Buffer.

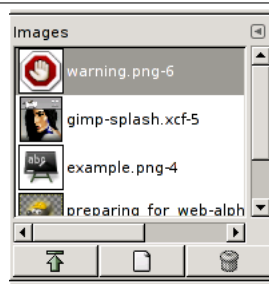
NOTE



You can change the size of the buffer previews in the dialog using the "Preview Size" submenu of the dialog's Tab menu.

9.6.1. Images dialog

Figure 9.44. The Images dialog



The Images Dialog displays the list of open images on your screen; each of them is represented with a thumbnail. This dialog is useful when you have many overlapping images on your screen: thus, you can raise the wanted image to foreground.

The Images dialog is a dockable dialog; see the section on **Dialogs and Docking** for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Images**.
- From an image menu: **Dialogs** → **Images**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Images**.

9.6.1.1. Grid/List modes, Previews size

As in all dialogs with thumbnails, the Tab menu gives you the possibility of adapting thumbnail display to your liking. See **Docking**

9.6.1.2. Using the Images dialog

At the top of the dialog appears the name of the currently selected image, if the "Show Image Selection" option is checked in Tab Menu. Useless if you have selected Grid mode: anyway, the name is displayed.

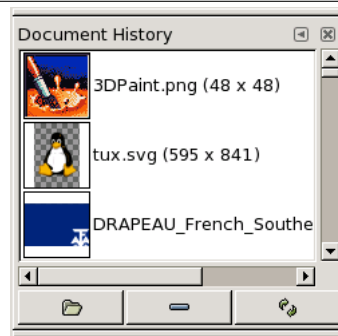
At center, open images appear, as a list or a grid, according to the selected mode. The current image is highlighted in list mode, outlined in grid mode. With a double click. With a simple click on an image name, you raise this image to the foreground of your screen. With a simple click you select this image so that buttons can act on it.

Three buttons at the bottom of the dialog allow you to operate on the selected image:

- *Raise this image's display*: The selected image appears at the foreground of your screen.
- *Create a new display for this image*: Duplicates the selected image.
- *Delete*: this button is not working.

9.6.2. Document History dialog

Figure 9.45. Document History dialog



The History Dialog displays the list of the documents you have opened in previous sessions. It is more complete than the list you get with the “Open Recent” command.

9.6.2.1. Activate Dialog

You can access to this dialog in different ways:

- from the toolbox-menu and the image Menu bar: **File** → **Open Recent** → **Document History**
- From the image Menu-bar: **Dialogs** → **Document History**
- By using the **Shift-Ctrl-H** keyboard shortcut.

9.6.2.2. Options

The scroll bar allows you to browse all images you have opened before.

The *Open the selected entry* button allows you to open the image you have selected. With “Shift” key pressed, it raises an image hidden behind others. With “Ctrl” key pressed, it opens the Open Image dialog.

The *Remove the selected entry* button allows you to remove an image from the History dialog. The image is removed from the recently open images list also. But the image itself is not deleted.

The *Recreate Preview* button updates preview in case of change. With “Shift” key pressed, it acts on all previews. With “Ctrl” key pressed, previews that can’t be found out are deleted.

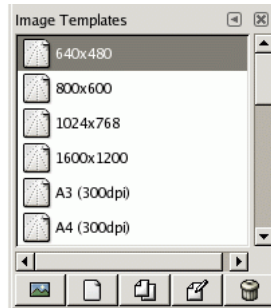
9.6.3. Templates

9.6.3.1. Dialog

Templates are templates for an image format to be created. Gimp offers you a lot of templates and you can create your owns. When you create a New image, you can access to the list of existing templates but you can’t manage them. The “Templates” dialog allows you to manage all these templates.

The Templates dialog is a dockable dialog; see the section on [Dialogs and Docking](#) for help on manipulating it. It can be activated in two ways:

- From the Toolbox menu: **File** → **Dialogs** → **Templates**.
- From an image menu: **Dialogs** → **Templates**.

Figure 9.46. The Templates dialog

In the Tab menu for the Templates dialog, you can choose between **View as Grid** and **View as List**. In Grid mode, templates are laid out in a rectangular array of identical icons (unless you gave them a particular icon, as we will see later). Only the name of the selected template is displayed. In List mode, they are lined up vertically; icons are identical too; all names are displayed.

In this Tab menu, the **Preview Size** option allows you to change the size of thumbnails.

9.6.3.2. Using the Templates dialog

You select a template by clicking on its icon. Right clicking reveals a local menu that offers the same functions as buttons.

The buttons at the bottom of the dialog allow you to operate on templates in several ways:

Create a new image from the selected template Clicking on this button opens the **Create a new image** on the model of the selected template.

Create a new template Clicking on this button opens the **New template** dialog, identical to the Edit Template dialog, that we will see below.

Duplicate the selected template Clicking on this button opens the Edit Template dialog that we are going to study now.

Edit the selected template Clicking on this button opens the **Edit Template** dialog.

Delete the selected template No comment.

9.6.4. Edit Template

The dialog allows you to set the specifications of the selected template.

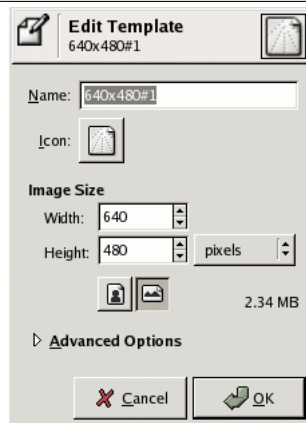
You can access to this editor by clicking on the **Edit Template** button in the **Templates** dialog.

OPTIONS

Name In this text box, you can modify the displayed template name.

Icon By clicking on this icon, you open a list of icons. You can choose one of them to illustrate the selected template name.

Image size Here you set the width and height of the new image. The default units are pixels, but you can switch to some other unit if you prefer, using the adjoining menu. If you do, note that the

Figure 9.47. The Edit Template dialog

resulting pixel size will be determined by the X and Y resolution (which you can change in the Advanced Options), and by the setting of "Dot for Dot", which you can change in the **View** menu.

NOTE



Please keep in mind, that every Pixel of an image is stored in the memory. If you're creating large files with a high density of pixels, Gimp will need some time for every function you're applying to the image.

Portrait/Landscape buttons These buttons toggle between Portrait and Landscape mode. Concretely, their effect is to exchange the values for Width and Height. If the X and Y resolutions are different (in Advanced Options), then these values are exchanged also. On the right, image size, image resolution and color space are displayed.

ADVANCED OPTIONS

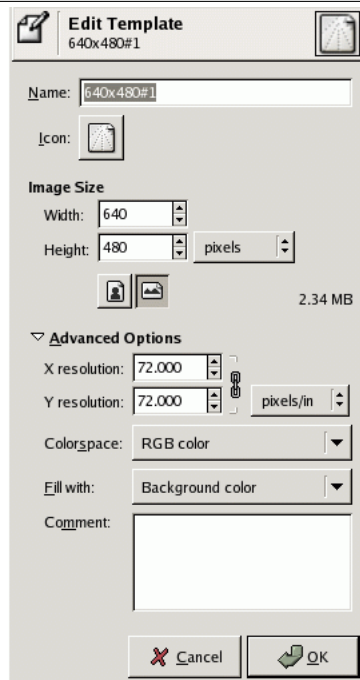
These are options that will mainly be of interest to more advanced users.

X and Y resolution These values come into play mainly in relation to printing: they do not affect the size of the image in pixels, but they determine its size on paper when printed. They can also affect the way the image is displayed on the monitor: if "Dot for Dot" is switched off in the **View** menu, then at 100% zoom, Gimp attempts to display the image on the monitor at the correct physical size, as calculated from the pixel dimensions and the resolution. The display may not be accurate, however, unless the monitor has been calibrated. This can be done either when Gimp is installed, or from the Display tab of the Preferences dialog.

Colorspace You can create the new image as either an RGB image or a grayscale image. You cannot create an indexed image directly in this way, but of course nothing prevents you from converting the image to indexed mode after it has been created.

Fill You have four choices for the solid color that will fill the new image's background layer:

- The Foreground color as shown in the Main Toolbox.
- The Background color as shown in the Main Toolbox.

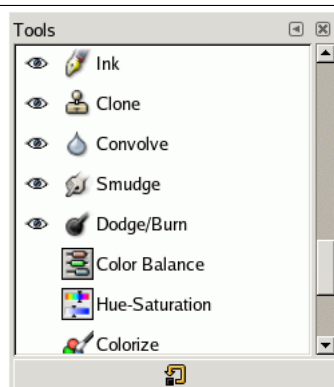
Figure 9.48. The Advanced Options dialog

- White
- **Transparent.** If this option is chosen, then the Background layer in the new image will be created with an alpha channel; otherwise not.

Comment You can write a descriptive comment here. The text will be attached to the image as a “parasite”, and will be saved along with the image by some file formats (but not all of them).

9.7. Misc dialogs

9.7.1. Tools dialog

Figure 9.49. The Tools dialog

The Tools dialog is used mainly to control the appearance of the Toolbox. It allows you to customize the set of tools for which icons are shown in the Toolbox, and the order in which the icons are arranged. Probably the most common use for it is to make the Color tools available directly from the Toolbox. You

can also use the Tools dialog to select a tool by clicking on its symbol, but for this purpose you might as well just use the Toolbox.

The Tools dialog is a dockable dialog; see the section on [Dialogs and Docking](#) for help on manipulating it. It can be activated in several ways:

- From the Toolbox menu: **File** → **Dialogs** → **Tools**.
- From an image menu: **Dialogs** → **Tools**.
- From the Tab menu in any dockable dialog: **Add Tab** → **Tools**.

9.7.1.1. Grid/List modes

In the Tab menu, you can choose between **View as Grid** and **View as List**. In Grid mode, the tools are laid out in a rectangular array. In List mode, they are lined up vertically, with each row showing the tool name, tool icon, and an “eye” icon if the tool is currently visible in the Toolbox.

9.7.1.2. Using the Tools dialog

The most basic thing you can do is to select a tool by clicking on its icon: this has the same effect as clicking on an icon in the Toolbox. You can do this in either List or Grid mode: the other functions of the dialog are available only in List mode.

The most important function of the Tools dialog is to let you choose which tools to make visible in the Toolbox, by toggling the “eye” icons that appear on the left side of each row in List mode. In particular, if you use the Color tools a lot, you may benefit from toggling visibility on for them here.

You can also change the order of tools in the Toolbox, by clicking on an item in the Tools dialog, in List mode, and dragging it up or down in the list. If you screw things up, you can always press the “Reset” button at the bottom of the dialog, to restore the defaults for order and visibility.

Right-clicking inside the dialog produces the Tools menu, which gives you an alternative way of toggling visibility or restoring the defaults.

9.7.2. Preferences

9.7.2.1. Introduction

The preferences dialog can be accessed from the Toolbox menu, as **File** → **Preferences**. It lets you customize many aspects of the way GIMP works. The following sections detail the settings that you can customize, and what they affect. This information applies specifically to Gimp 2.2, but the settings for Gimp 2.0 are similar enough that you should be able to understand them based on the explanations here.

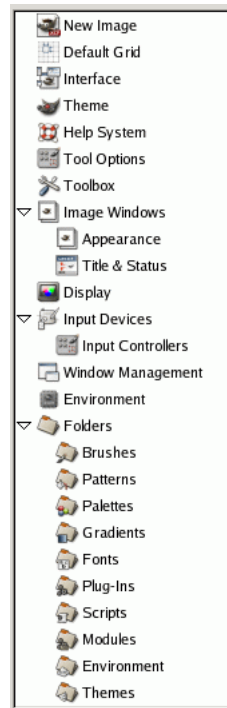
All of the Preferences information is stored in a file called `gimprc` in your personal GIMP directory, so if you are a “power user” who would rather work with a text editor than a graphical interface, you can alter preferences by editing that file. If you do, and you are on a Linux system, then `man gimprc` will give you a lot of technical information about the contents of the file and what they are used for.

9.7.2.2. New Image Preferences

This tab lets you customize the default settings for the New Image dialog. See the [New Image Dialog](#) section for an explanation of what each of the values means.

9.7.2.3. Default Image Grid

This page lets you customize the default properties of GIMP’s grid, which can be toggled on or off using **View** → **Show Grid** from the image menu. The settings here match those in the Configure Image Grid dialog, which can be used to reconfigure the grid for an existing image, by choosing **Image** → **Configure Grid** from the image menu. See the [Configure Grid dialog](#) section for information on the meaning of each of the settings.

Figure 9.50. List of preference pages

9.7.2.4. Interface

OPTIONS

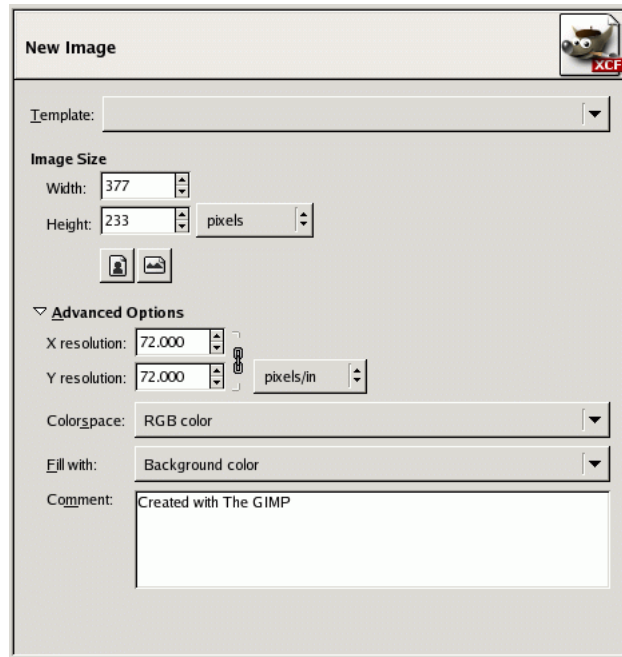
Previews By default, GIMP shows miniature previews of the contents of layers and channels in several places, including the Layers dialog. If for some reason you would prefer to disable these, you can do it by unchecking “Enable layer and channel previews”. If you do want previews to be shown, you can customize their sizes using the menus for “Default layer and channel preview size” and “Navigation preview size”.

Keyboard Shortcuts Any menu item can be activated by holding down **Alt** and pressing a sequence of keys. Normally, the key associated with each menu entry is shown as an underlined letter in the text, called *accelerator*. If for some reason you would prefer the underlines to go away (maybe because you think they’re ugly and you don’t use them anyway), then you can make this happen by unchecking “Show menu mnemonics”.

GIMP can give you the ability to create keyboard shortcuts (key combinations that activate a menu entry) dynamically, by pressing the keys while the pointer hovers over the desired menu entry. However, this capability is disabled by default, because it might lead novice users to accidentally overwrite the standard keyboard shortcuts. If you want to enable it, check “Use dynamics keyboard shortcuts” here.

Pressing the button for “Configure Keyboard Shortcuts” brings up the Shortcut Editor, which gives you a graphical interface to select menu items and assign shortcuts to them.

If you change shortcuts, you will probably want your changes to continue to apply in future GIMP sessions. If not, uncheck “Save keyboard shortcuts on exit”. But remember that you have done this, or you may be frustrated later. If you don’t want to save shortcuts on exit every session, you can save the current settings at any time using the “Save Keyboard Shortcuts Now” button, and they will be applied to future sessions. If you decide that you have made some bad decisions concerning shortcuts, you can reset them to their original state by pressing “Reset Saved Keyboard Shortcuts to Default Values”.

Figure 9.51. New Image Preferences

9.7.2.5. Theme

This page lets you select a theme, which determines many aspects of the appearance of the GIMP user interface, including the set of icons used, their sizes, fonts, spacing allowed in dialogs, etc. Two themes are supplied with GIMP: **Default**, which is probably best for most people, and **Small**, which may be preferable for those with small or low-resolution monitors. Clicking on a theme in the list causes it to be applied immediately, so it is easy to see the result and change your mind if you don't like it.

You can also use custom themes, either by downloading them from the net, or by copying one of the supplied themes and modifying it. Custom themes should be placed in the `themes` subdirectory of your personal GIMP directory: if they are, they will appear in the list here. Each theme is actually a directory containing ASCII files that you can edit. They are pretty complicated, and the meaning of the contents goes beyond the scope of this documentation, but you should feel free to experiment: in the worst case, if you mess things up completely, you can always revert back to one of the supplied themes.

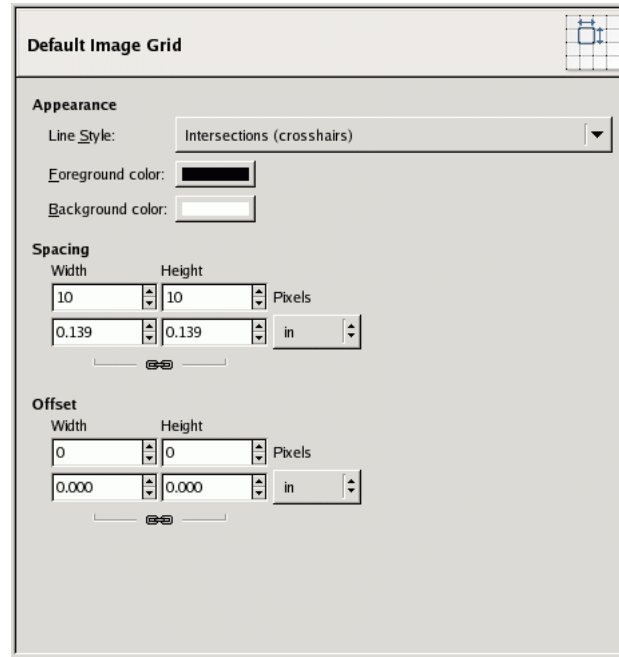
You cannot edit the supplied themes unless you have administrator permissions, and even if you do, you shouldn't: if you want to customize a theme, make a copy in your personal directory and work on it. If you make a change and would like to see the result "on the fly", you can do so by saving the edited theme file and then pressing **Reload Current Theme**.

9.7.2.6. Help System

Options GENERAL

Show tool tips Tool tips are small text bubbles that appear when the pointer hovers for a moment over some element of the interface, such as a button or icon. Sometimes they explain what the element does; sometimes they give you hints about non-obvious ways to use it. If you find them too distracting, you can disable them here by unchecking this option. We recommend that you leave them enabled unless you are a very advanced user.

[GIMP 2.0] "F1" shows context-dependent help In GIMP 2.0, this option controls whether pressing the **F1** key will evoke Help information for the object in which the mouse pointer is currently located. GIMP 2.2 no longer gives you the ability to disable this function.

Figure 9.52. Default Grid Preferences

Show tips on startup Startup tips are helpful hints that appear each time you start GIMP. You can switch them on or off here. If you have switched them off by unchecking “Show tip next time GIMP starts” in the tip window, you can switch them back on by checking here. Whatever you decide to do, at some point you should take the time to go through the list of tips: they are considered to be very useful, and the things they tell you are not easy to discover by experimenting. If you prefer, you can read them at any time by choosing **Help** → **Tip of the Day** in the Toolbox menu.

HELP BROWSER

Help browser to use GIMP Help is supplied in the form of HTML files, i. e., web pages. You can view them using either a special help browser that comes with GIMP, or a web browser of your choice. Here you choose which option to use. Because the help pages were carefully checked to make sure they work well with GIMP’s browser, whereas other web browsers are somewhat variable in their support of features, the safer option is to use the internal browser; but really any modern web browser should be okay.

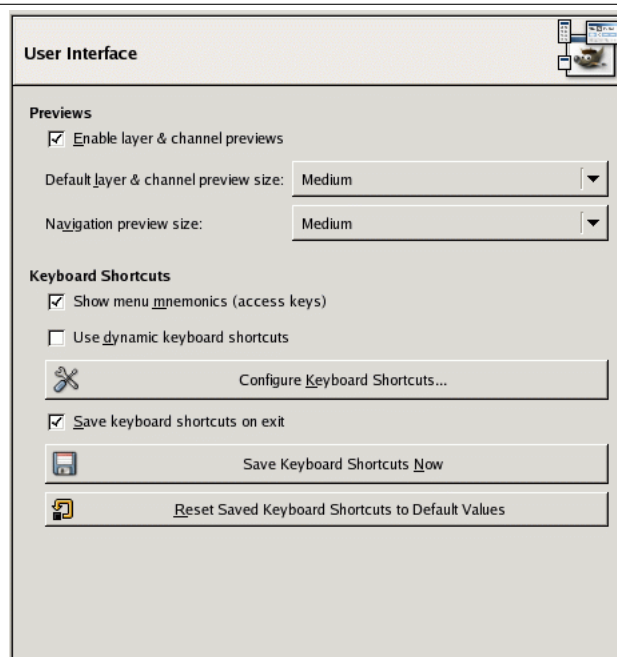
NOTE



Note that the help browser is not available on all platforms. If it is missing, the web-browser will be used to allow access to the help pages.

WEB BROWSER

Figure 9.53. Assorted Interface Preferences. This page lets you customize layer/channel previews and keyboard shortcuts.



Web browser to use If you selected “Internal” for the Help browser, this option has no effect. If you selected “Web browser”, you can decide here which browser to use, and how to invoke it, by entering the command that will be used to run the browser. The button to the right brings up a file selector, which you can use to locate the executable file for the browser if you like, but in most cases it is probably easier to enter a command by hand.

NOTE



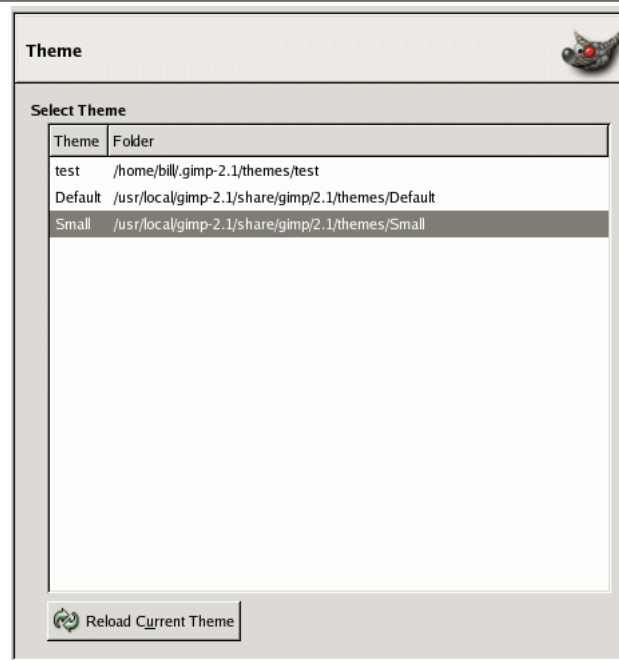
In Windows, the system-wide configured default web-browser will be used. The input field described here is not available on this platform.

9.7.2.7. Tool Options

Options GUIDE AND GRID SNAPPING

Snap distance “Snapping” to guides, or to an image grid, means that when a tool is applied by clicking somewhere on the image display, if the clicked point is near enough to a guide or grid, it is shifted exactly onto the guide or grid. Snapping to guides can be toggled using **View** → **Snap to Guides** in the image menu; and if the grid is switched on, snapping to it can be toggled using **View** → **Snap to Grid**. This preference option determines how close a clicked point must be to a guide or grid in order to be snapped onto it, in pixels.

FINDING CONTIGUOUS REGIONS

Figure 9.54. Theme Preference

Default threshold The “magic wand” tool creates selections that consist of contiguous regions, i. e., regions that are not divided by swaths of open space. This option determines how near each other two pixels need to be in order to be considered contiguous.

SCALING

Default interpolation When you scale something, each pixel in the result is calculated by interpolating several pixels in the source. This option determines the default interpolation method: it can always be changed, though, in the Tool Options dialog. There are three choices:

None is fastest, but quite crude: you should only consider using it if your machine is very seriously speed-impaired.

Linear is the default, and is good enough for most purposes.

Cubic is the best (although it can actually look worse than Linear for some types of images), but also the slowest.

PAINT OPTIONS SHARED BETWEEN TOOLS

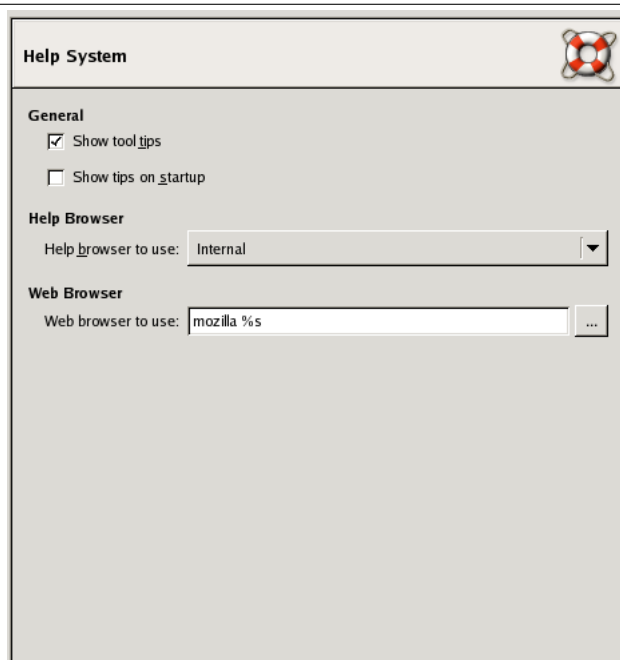
Brush, Pattern, Gradient You can decide here whether changing the brush etc for one tool should cause the new item to be used for all tools, or whether each individual tool (pencil, paintbrush, airbrush, etc) should remember the item that was last used for it specifically.

9.7.2.8. Toolbox

Options This page lets you customize the appearance of the Toolbox, by deciding whether the three “context information” areas should be shown at the bottom.

APPEARANCE

Figure 9.55. Help System Preferences (Linux Screenshot). This page lets you customize the behaviour of the gimp help system.



Show foreground and background color Controls whether the color area on the left (3) appears in the Toolbox.

Show active brush, pattern, and gradient Controls whether the area in the center (4), with the brush, pattern, and gradient icons, appears in the Toolbox.

Show active image Controls whether a preview of the currently active image appears on the right (5).

9.7.2.9. Image Windows

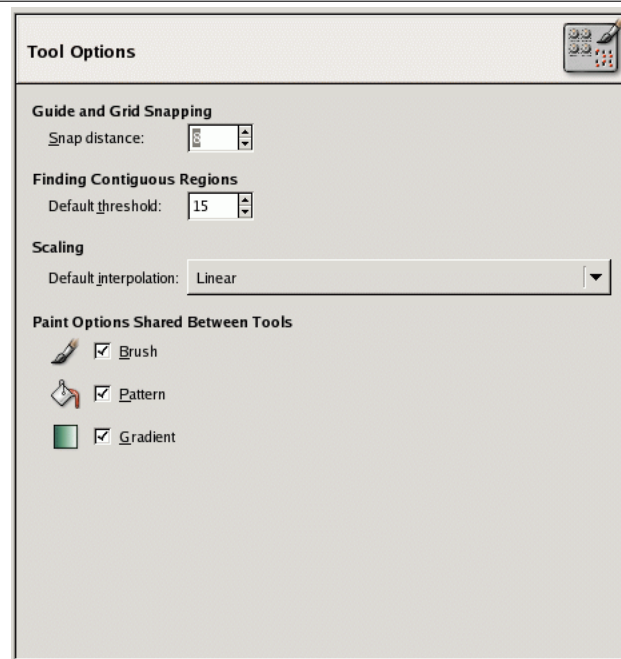
Options GENERAL

Use "Dot for dot" by default Using "Dot for dot" means that at 1:1 zoom, each pixel is the image is scaled to one pixel on the display. If "Dot for dot" is not used, then the displayed image size is determined by the X and Y resolution of the image. See the [Scale Image](#) section for more information.

Marching ants speed When you create a selection, the edge of it is shown as a dashed line with dashes that appear to move, marching slowly along the boundary: they are jokingly called "marching ants". The smaller the value entered here, the faster the ants march (and consequently the more distracting they are!).

ZOOM AND RESIZE BEHAVIOR

Figure 9.56. Tool Options Preferences. This page lets you customize several aspects of the behavior of tools.



Resize window on zoom If this option is checked, then each time you zoom the image, the image window will automatically resize to follow it. Otherwise, the image window will maintain the same size when you zoom the image.

Resize window on image size change If this option is checked, then each time change the size of the image, by cropping or resizing it, the image window will automatically resize to follow. Otherwise, the image window will maintain the same size.

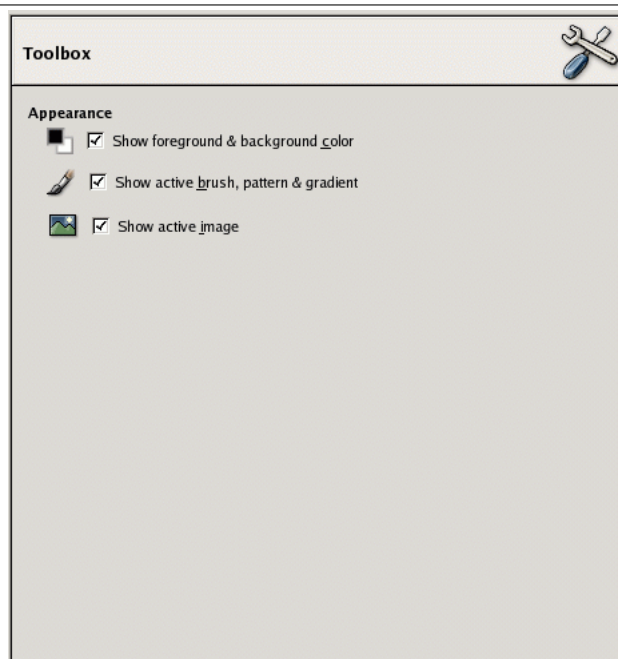
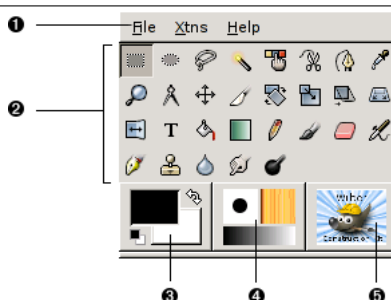
Initial zoom ratio You can choose either to have images, when they are first opened, scaled so that the whole image fits comfortably on your display, or else shown at 1:1 zoom. If you choose the second option, and the image is too large to fit on your display, then the image window will show only part of it (but you will be able to scroll to other parts).

MOUSE CURSORS

Show brush outline If this option is checked, then when you use a paint tool, the outline of the brush will be shown on the image as you move the pointer around. On slow systems, if the brush is very large, this could occasionally cause some lag in GIMP's ability to follow your movements: if so, switching this off might help. Otherwise, you will probably find it quite useful.

Show paint tool cursor If this is checked, a cursor will be shown. This is in addition to the brush outline, if the brush outline is being shown. The type of cursor is determined by the next option.

Cursor mode This option has no effect unless **Show paint tool cursor** is checked. If it is, you have three choices: **Tool icon**, which causes a small iconic representation of the currently active tool to be shown beside the cursor; **Tool icon with crosshair**, which shows the icon as well as a crosshair indicating the center of the cursor; or **Crosshair only**.

Figure 9.57. Toolbox Preferences**Figure 9.58.** Default Toolbox appearance

Cursor rendering If you choose “Fancy” here, the cursor is drawn in grayscale. If you choose “Black and White”, it is drawn in a simpler way that may speed things up a little bit if you have speed issues.

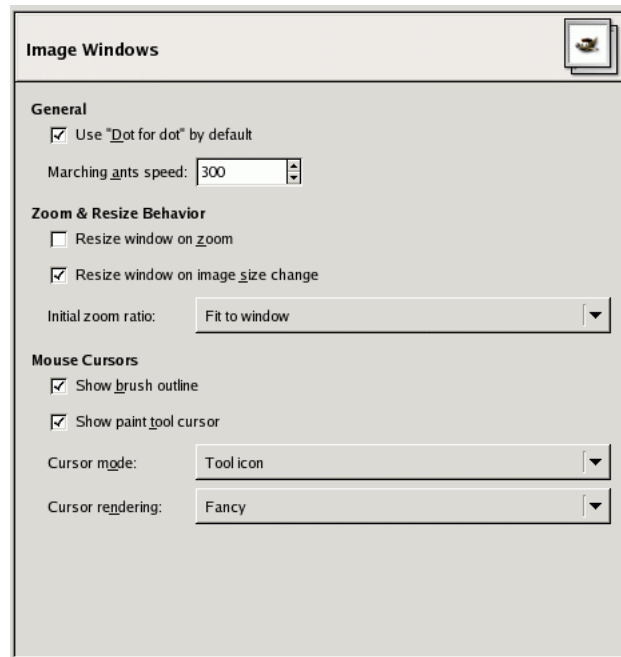
9.7.2.10. Image Window Appearance

The only parts that may need further explanation are the ones related to padding. “Padding” is the color shown around the edges of the image, if it does not occupy all of the display area (shown in light gray in all the figures here). You can choose among four colors for the padding color: to use the color specified by the current theme; to use the light or dark colors specified for checks, such as represent transparent parts of the image; or to use a custom color, which can be set using the color button for “Custom padding color”.

9.7.2.11. Image Window Title and Statusbar

Choosing a Format You can choose among several predesigned formats, or you can create one of your own, by writing a *format string* in the entry area. Here is how to understand a format string: anything you type is shown exactly as you type it, with the exception of *variables*, whose names all begin with “%”. Here is a list of the variables you can use: *Variable: %f Meaning: Bare filename of the image, or “Untitled”*

Figure 9.59. General Image Window Preference. This page lets you customize several aspects of the behaviour of image windows.



Variable: %F Meaning: Full path to file, or "Untitled"

Variable: %p Meaning: Image id number (this is unique)

Variable: %i Meaning: View number, if an image has more than one display

Variable: %t Meaning: Image type (RGB, grayscale, indexed)

Variable: %z Meaning: Zoom factor as a percentage

Variable: %s Meaning: Source scale factor (zoom level = %d/%s)

Variable: %d Meaning: Destination scale factor (zoom level = %d/%s)

Variable: %Dx Meaning: Expands to x if the image is dirty, nothing otherwise

Variable: %Cx Meaning: Expands to x if the image is clean, nothing otherwise

Variable: %l Meaning: The number of layers

Variable: %L Meaning: Number of layers (long form)

Variable: %m Meaning: Memory used by the image

Variable: %n Meaning: Name of the active layer/channel

Variable: %P Meaning: id of the active layer/channel

Variable: %w Meaning: Image width in pixels

Variable: %W Meaning: Image width in real-world units

Variable: %h Meaning: Image height in pixels

Variable: %H Meaning: Image height in real-world units

Variable: %u Meaning: Unit symbol (eg. px for Pixel)

Variable: %U Meaning: Unit abbreviation

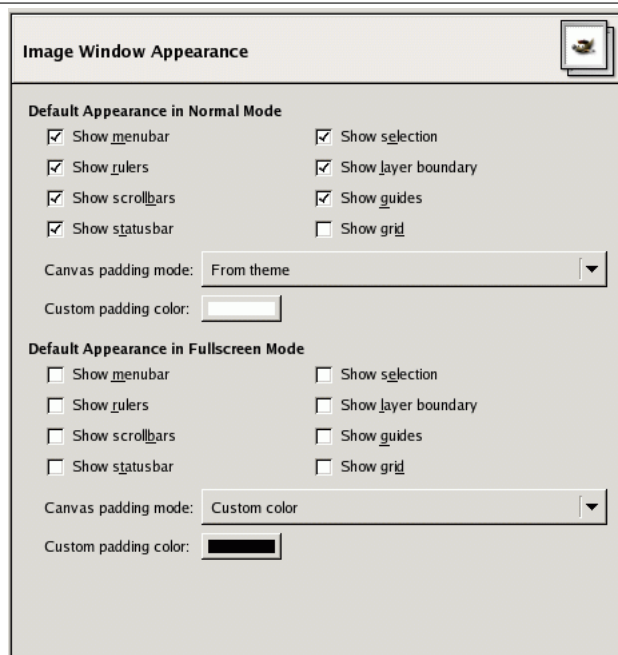
Variable: %% Meaning: A literal "%" symbol

9.7.2.12. Display

Options TRANSPARENCY

Transparency type By default, GIMP indicates transparency using a checkerboard pattern with mid-tone checks, but you can change this if you want, either to a different type of checkerboard, or to solid black, white, or gray.

Figure 9.60. Image Window Appearance Defaults. This page lets you customize the default appearance of image windows, for normal mode and for fullscreen mode. All of the settings here can be altered on an image-specific basis using entries in the View menu. See the [Image Window](#) section for information on the meaning of the entries.



Check size Here you can alter the size of the squares in the checkerboard pattern used to indicate transparency.

Monitor Resolution Monitor Resolution is the ratio of pixels, horizontally and vertically, to inches. You have three ways to proceed here:

- Get Resolution from windowing system. (easiest, probably inaccurate).
- Set Manually
- Push the Calibrate Button.

The Calibrate Dialog My monitor was impressively off when I tried the Calibrate Dialog. The "Calibrate Game" is fun to play. You will need a soft ruler.

9.7.2.13. Input Devices

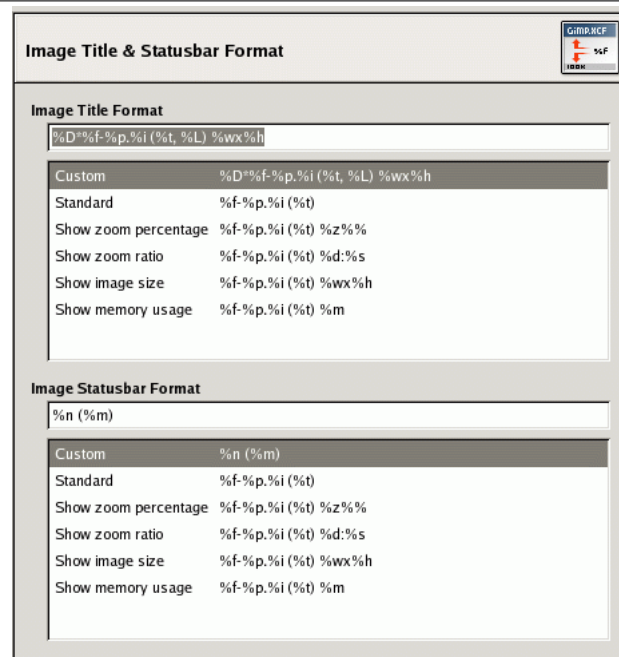
EXTENDED INPUT DEVICES

Configure Extended Input Devices This large button allows you to set the devices associated with your computer: tablet, MIDI keyboard... If you have a tablet, you will see a dialog like this:

FIXME

Save input device settings on exit When you check this box, GIMP remembers the tool, color, pattern and brush you were using the last time you quitted.

Figure 9.61. Image Window Title and Statusbar formats. This page lets you customize the text that appears in two places: the title bar of an image, and the status bar. The title bar should appear above the image; however this depends on cooperation from the window manager, so it is not guaranteed to work in all cases. The statusbar appears underneath the image, on the right side. See the [Image Window](#) section for more information.



Save input device settings now Self explanatory.

Reset saved input device settings to default values Delete your settings and restore default settings.

9.7.2.14. Input Controllers

This dialog has two tabs that allow you to assign actions to the mouse wheel and to keyboard keys:

MAIN MOUSE WHEEL

General

- **Dump events from this controller:** FIXME
- **Enable this controller:** this option must be checked if you want to add a new action to the mouse wheel.

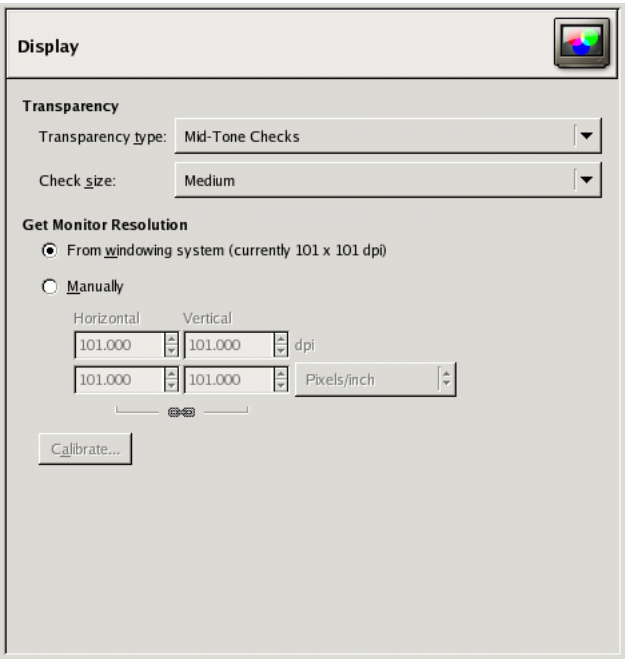
Mouse Wheel Events In this windows with scroll bars you have: on the left, the possible events concerning the mouse wheel, more or less associated with control keys; on the right, the action assigned to the event when it will happen. You have also two buttons, one to **Edit** the selected event, the other to **Cancel** the action of the selected event.

Some actions are assigned to events yet. They seem to be examples, as they are not functional.

Select the action allocated to the event Afer selecting an event, if you click on the **Edit** button, you open the following dialog:

If an action exists yet for this event, the window will open on this action. Else, the window will display the sections that order actions. Click on an action to select it.

Figure 9.62. Display Preferences. This page lets you customize the way transparent parts of an image are represented, and lets you recalibrate the resolution of your monitor.



MAIN KEYBOARD

NOTE


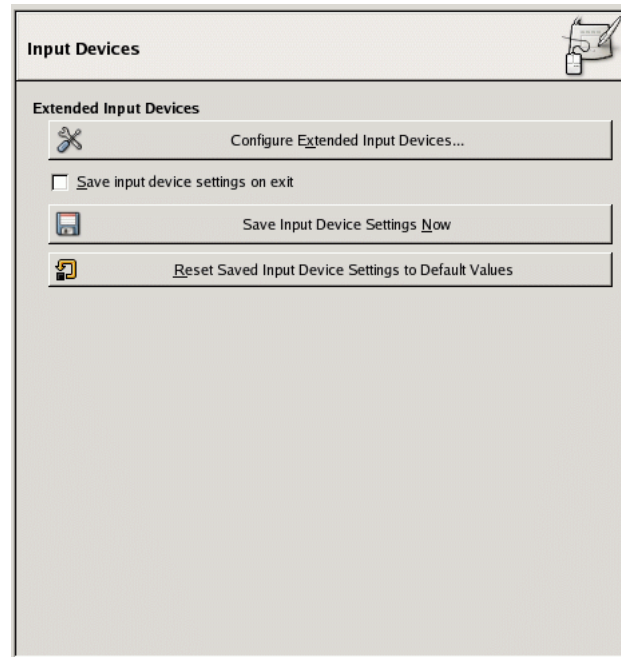
 You will find an example of these notions in [Creating a variable size brush](#).

Figure 9.63. The Calibration dialog



Figure 9.64. Input devices preferences

9.7.2.15. Window Managment

This page lets you customize the way windows are handled in GIMP. You should note that GIMP does not manipulate windows directly, instead it sends requests to the window manager (i. e., to Windows if you are running in Windows; to Metacity if you are running in a standard Gnome setup in Linux; etc). Because there are many window managers, and not all of them are well behaved, it cannot be guaranteed that the functions described here will actually work as described. However, if you are using a modern, standards-compliant window manager, they ought to.

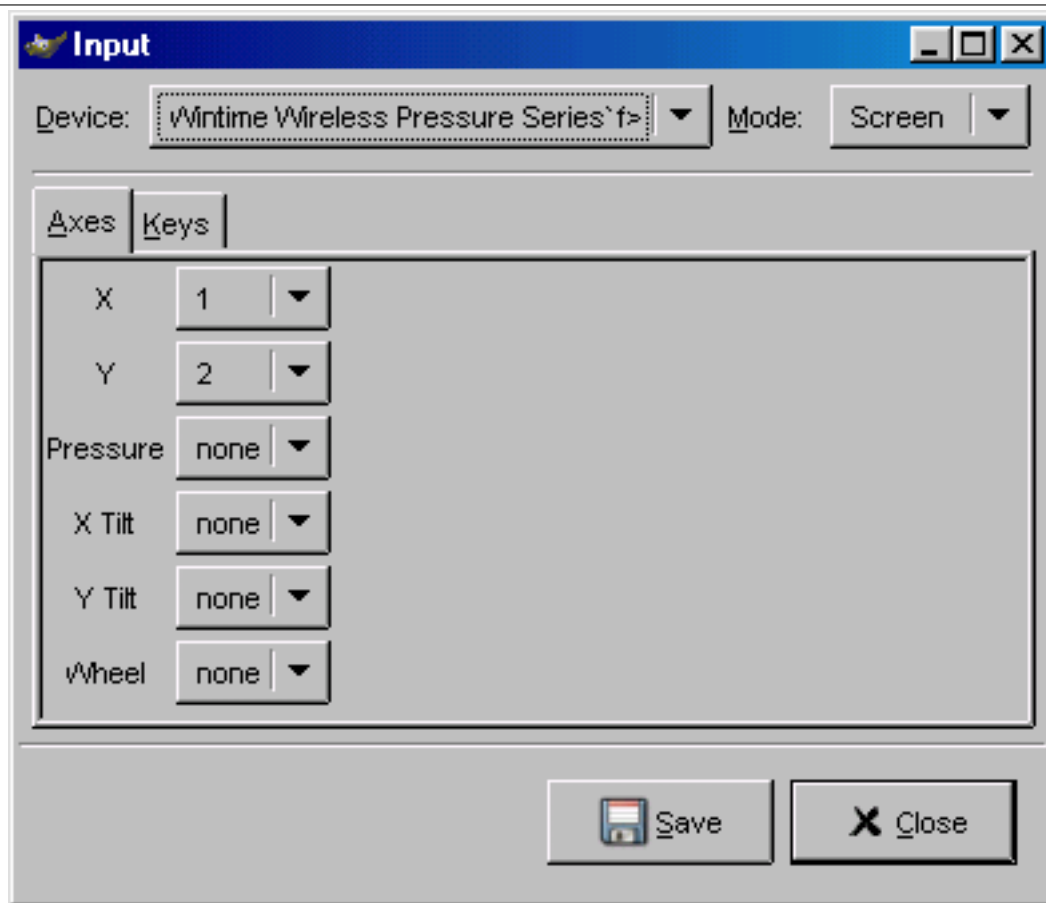
Options WINDOW MANAGER HINTS

Envois pour la boîte d'outils et les fenêtres attachables The choices you make here determine how the Toolbox, and the docks that hold dialogs, will be treated. If you choose "Normal Window", they will be treated like any other windows. If you choose "Utility Window", they will be raised into visibility whenever you activate an image window, and kept in front of every image window. If you choose "Keep above", they will be kept in front of every other window at all times. Note that changes you make here will not take effect until the next time you start GIMP.

FOCUS

Activate the focused image Normally, when you focus an image window (usually indicated by a change in the color of the frame), it becomes the "active image" for GIMP, and therefore the target for any image-related actions you perform. Some people, though, prefer to set up their window managers such that any window entered by the pointer is automatically focused. If you do this, you may find that it is inconvenient for focused images to automatically become active, and may be happier if you uncheck this option.

WINDOW POSITIONS

Figure 9.65. Preferences for a tablet

Save window positions on exit If this option is checked, the next time you start GIMP, you will see the same set of dialog windows, in the same positions they occupied when you last exited.

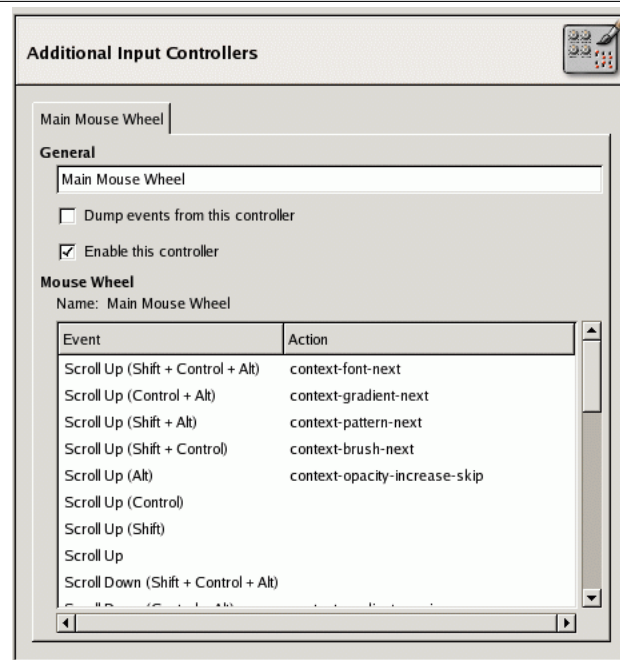
Save Window Positions Now This button is only useful if "Save window positions on exit" is unchecked. It allows you to set up your windows they way you like, click the button, and then have them come up in that arrangement each time you start GIMP.

Reset Saved Window Positions to Default Values If you decide that you are unhappy with the arrangement of windows you have saved, and would rather go back to the default arrangement than spend time moving them around, you can do so by pressing this button.

9.7.2.16. Environment

Options RESOURCE CONSUMPTION

Minimal number of undo levels GIMP allows you to undo most actions by maintaining an "Undo History" for each image, for which a certain amount of memory is allocated. Regardless of memory usage, however, GIMP always permits some minimal number of the most recent actions to be undone: this is the number specified here. See [Undoing](#) for more information about GIMP's Undo mechanism.

Figure 9.66. Input controllers preferences

Maximum undo memory This is the amount of undo memory allocated for each image. If the Undo History size exceeds this, the oldest points are deleted, unless this would result in fewer points being present than the minimal number specified above.

Tile cache size This is the amount of system RAM allocated for GIMP image data. If GIMP requires more memory than this, it begins to swap to disk, which may in some circumstances cause a dramatic slowdown. You are given an opportunity to set this number when you install GIMP, but you can alter it here. See [How to Set Your Tile Cache](#) for more information.

Maximum new image size This is not a hard constraint: if you try to create a new image larger than the specified size, you are asked to confirm that you really want to do it. This is to prevent you from accidentally creating images much larger than you intend, which can either crash GIMP or cause it to respond verrrrrrrry slowwwwwwwly.

IMAGE THUMBNAILS

Size of thumbnails This options allows you to set the size of the thumbnails shown in the File Open dialog (and also saved for possible use by other programs). The options are "None", "Normal (128x128)", and "Large (256x256)".

Maximum filesize for thumbnailing If an image file is larger than the specified maximum size, GIMP will not generate a thumbnail for it. This options allows you to prevent thumbnailing of extremely large image files from slowing GIMP to a crawl.

SAVING IMAGES

Confirm closing of unsaved images Closing an image is not undoable, so by default GIMP asks you to confirm that you really want to do it, whenever it would lead to a loss of unsaved changes. You can disable this if you find it annoying; but then of course you are responsible for remembering what you have and have not saved.

9.7.2.17. Folders

This page allows you to set the locations for two important folders used by GIMP for temporary files. The pages below it allow you to customize the locations searched for resources such as brushes etc.; see [Data Folders](#) for a description that applies to them. You can change the folders here by editing the entries, or by pressing the buttons on the right to bring up a file chooser window.

FOLDERS

Temp folder This folder is used for temporary files: files created for temporary storage of working data, and then deleted within the same GIMP session. It does not require a lot of space or high performance. By default, a subdirectory called `tmp` in your personal GIMP directory is used, but if that disk is very cramped for space, or has serious performance issues, you can change it to a different directory. The directory must exist and be writable by you, or bad things will happen.

Swap folder This is the folder used as a “memory bank” when the total size of images and data open in GIMP exceeds the available RAM. If you work with very large images, or images with many layers, or have many images open at once, GIMP can potentially require hundreds of megabytes of swap space, so available disk space and performance are definitely things to think about for this folder. By default, it is set to your personal GIMP directory, but if you have another disk with more free space, or substantially better performance, you may see a significant benefit from moving your swap folder there. The directory must exist and be writable by you.

9.7.2.18. Data Folders

GIMP uses several types of resources – such as brushes, patterns, gradients, etc. – for which a basic set are supplied by GIMP when it is installed, and others can be created or downloaded by the user. For each such resource type, there is a Preference page that allows you to specify the *search path*: the set of directories from which items of the type in question are automatically loaded when GIMP starts. These pages all look very much the same: the page for brushes is shown to the right as an example.

By default, the search path includes two folders: a *system* folder, where items installed along with GIMP are placed, and a *personal* folder, inside your personal GIMP directory, where items added by you should be placed. The system folder should not be marked as writable, and you should not try to alter its contents. The personal folder must be marked as writable or it is useless, because there is nothing inside it except what you put there.

You can customize the search path with the buttons at the top of the dialog.

OPTIONS

Select a Folder If you click on one of the folders in the list, it is selected for whatever action comes next.

Add/Replace Folder If you type the name of a folder in the entry space, or navigate to it using the file chooser button on the right, and then click the left button, this will replace the selected folder with the one you have specified. If nothing in the list is selected, the folder you specify will be added to the list. If the light-symbol to the left of the text entry area is red instead of green, it means that the folder you have specified does not exist. GIMP will not create it for you, so you should do this immediately.

Move Up/Down If you click on the up-arrow or down-arrow buttons, the selected folder will be changed to the following or preceding one in the list.

Delete Folder If you click the trash-can button, the selected folder will be deleted from the list. (The folder itself is not affected; it is merely removed from the search path.) Deleting the system folder is probably a bad idea, but nothing prevents you from doing it.

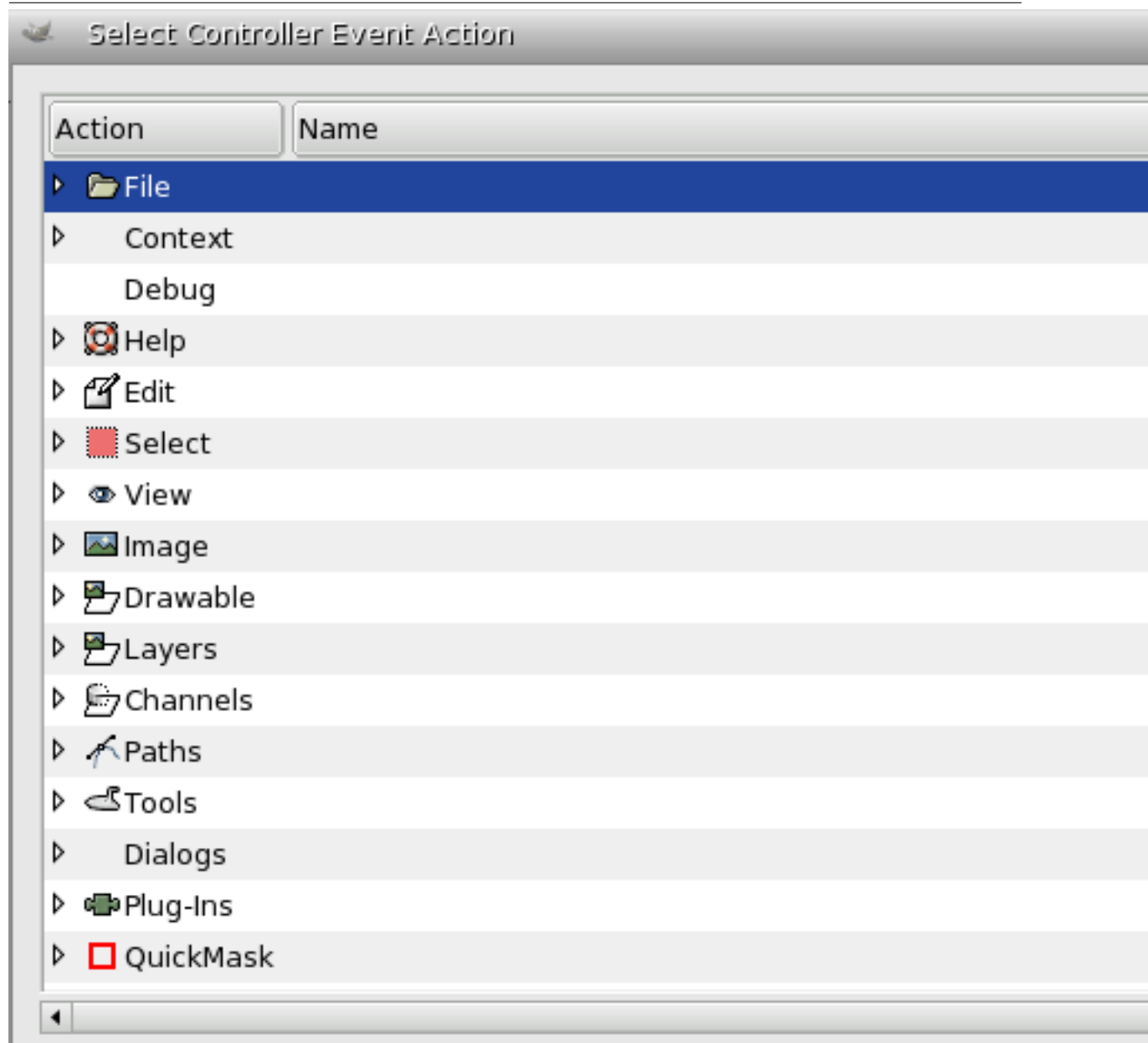
Figure 9.67. Select Controller Event Action

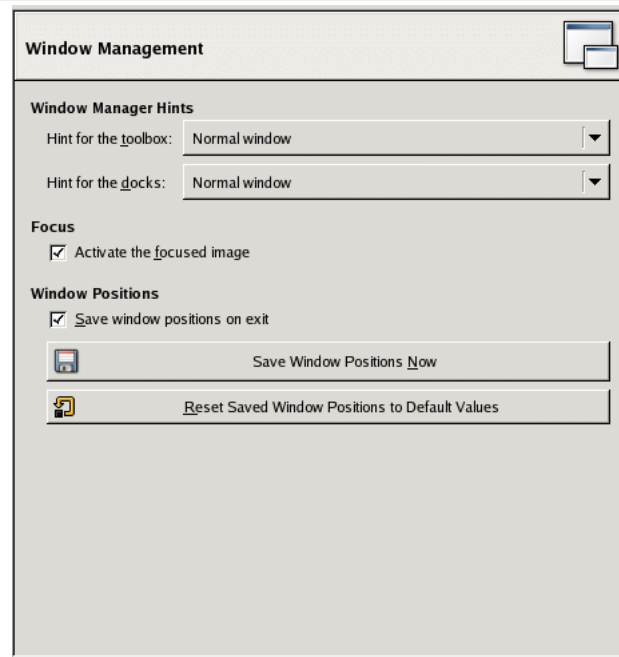
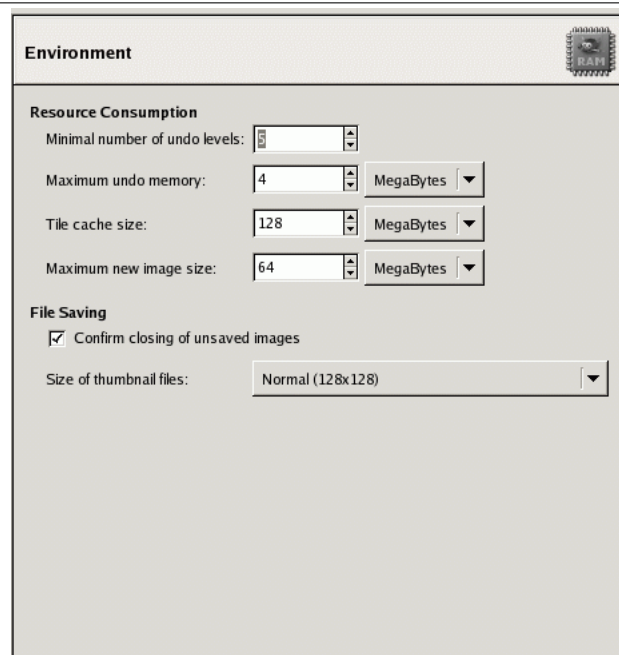
Figure 9.68. Window Management Preferences**Figure 9.69.** Environment Preferences. This page lets you customize the amount of system memory allocated for various purposes. It also allows you to disable the confirmation dialogs that appear when you close unsaved images, and to set the size of thumbnail files that GIMP produces.

Figure 9.70. Basic Folder Preferences

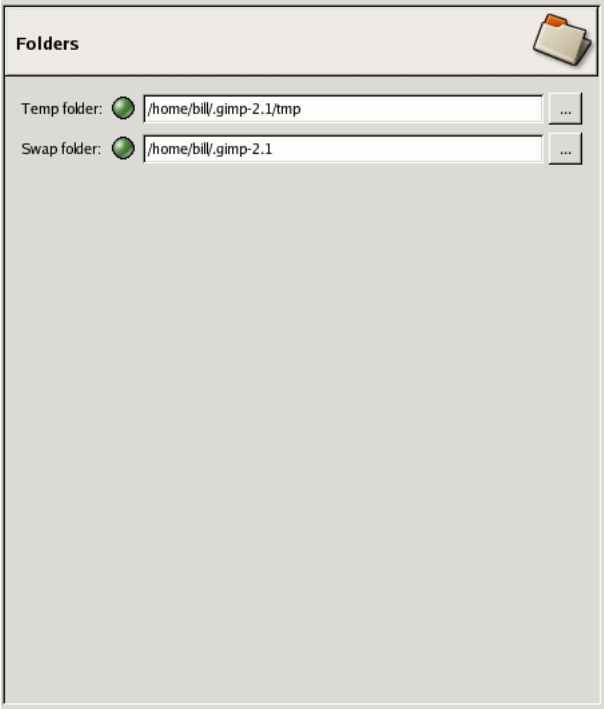
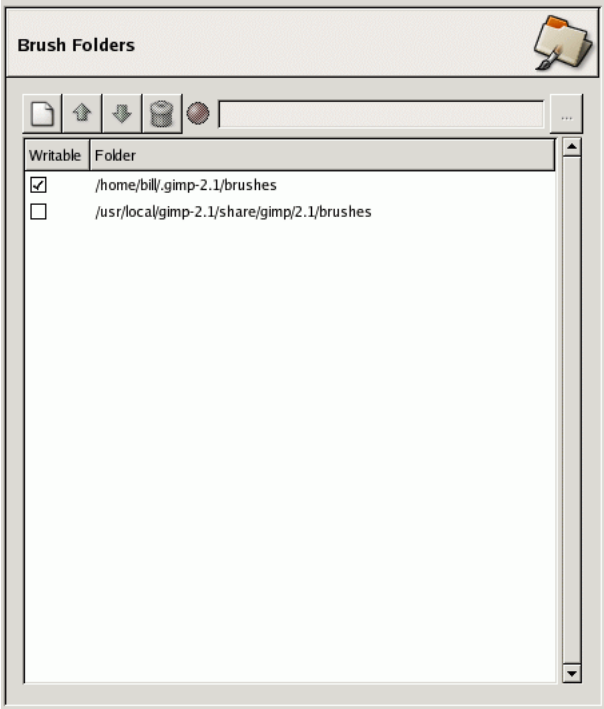


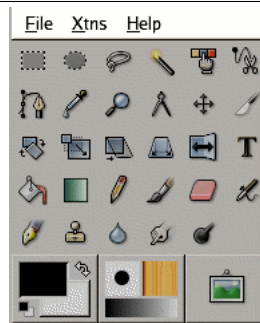
Figure 9.71. Preferences: Brush Folders



10. Menus

10.1. GIMP Menus

Figure 10.1. Toolbox Menu



There are many places in GIMP where you can find menus. The aim of this chapter is to explain all the commands that are accessible from the menu in the toolbox and image window. All the context menus and the menu entries for the other dialogs are described elsewhere in the chapter that describes the dialog itself.

10.1.1. Context menus

Right clicking on certain elements of the GIMP interface opens a “Context menu” which lead to a variety of functions:

- On image windows: the image menu. This is useful when working in full screen mode, without menu-bar.
- On a layer in the Layer Dialog or on a channel in the Channel Dialog: functions for the selected layer or channel.
- Right-clicking on the image menu bar has the same action as left-clicking.
- Right-clicking on the a title bar: these functions does not belong to GIMP but to the interface management program of your system.

10.1.2. Detachable sub-menus


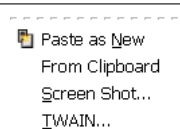
The sub-menus of the image menu you get by right-clicking (this image menu also) and the sub-menus of the tool-box –you get them by clicking on the  icon – have an interesting property. At the top of their window they have a dotted line. When you click on this dotted line, the menu under is detached and becomes a separate window.

Figure 10.2. The Acquire sub-menu and its Detached sub-menu

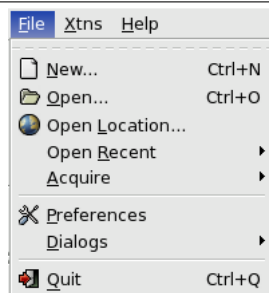


Detached sub-menus originating from the Tool-box are visible only if the Tool-box is active. Detached sub-menus originating from the image window are actually independant: always visible, their functions apply to the current image and they persist when all images are closed.

10.2. Toolbox File Menu

10.2.1. Toolbox File Menu

Figure 10.3. Contents of the File menu



The Toolbox is the heart of the GIMP. It contains the most commonly used controls, and the highest-level menus. Two of the menus, **File** and **Help**, can also be accessed from the menubars located above each image display, although their contents are somewhat different. The Toolbox is the only place to access the **Xtns** (Extensions) menu.

- [Section 10.5.2 on page 269](#)
- [Section 10.5.3 on page 271](#)
- [Section 10.5.5 on page 273](#)
- [Section 10.5.6 on page 273](#)
- [Section 10.5.15 on page 277](#)

You may find others entries in this menu-bar. They don't belong to GIMP standard data but have been added by some plug-in.

10.2.2. Acquire

Figure 10.4. The Acquire submenu of the File menu of Toolbox



This item opens a window that gives the list of the available means for importing images into the GIMP. This makes it possible to acquire images from sources other than a disk or a network, such as Screen capture or Scanner.

10.2.2.1. Activate Submenu

- You can find this command in the Toolbox menu: **File** → **Acquire**

10.2.2.2. Submenu entries

These commands are somewhat different according to your system as Gimp calls system functions.

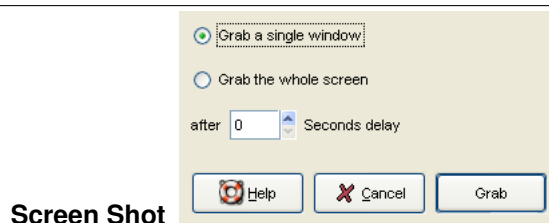
"Paste as new" and "Paste from clipboard" Both commands are redundant with the **Paste as New** command of the Edit menu. All three of them open a new image and paste clipboard content in it.

TIP



The **Print Screen** key captures screen into clipboard. So, with these commands, you can capture submenus that, otherwise, disappear as soon as you click on screen.

Figure 10.5. The Screen Shot window



This command opens a dialog where you can find three options to grab the object:

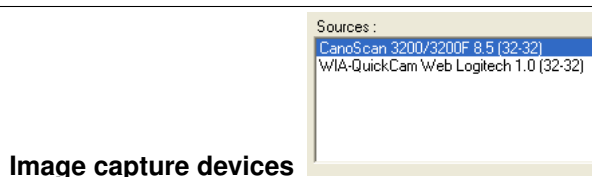
- **a Single Window:** You will be able to select the window to be captured.
- **the Whole Screen:** All the screen will be captured.
- **Select Window After ... Seconds Delay:** If you enter 0 second, capture will happen as soon as you click on the wanted window. If you enter a delay, you will have some time to modify the window before capture.
- **Grab after ... seconds delay:** If you enter 0 second delay, the whole screen capture will happen as soon as you click on the **Grab** button. If you enter a delay, you will have some time to modify screen before capture.

NOTE



Before starting capture, make sure that the window to be captured is not partially covered by another one.

Figure 10.6. Scanner and Web-cam



Devices to take pictures are too various for a common description. Fortunately, using them is intuitive. In the example above, you can launch scanner or take an image with the web-cam.

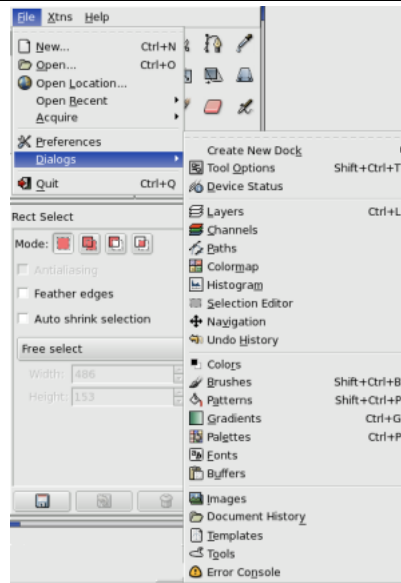
10.2.3. Preferences

This item displays the **Preferences dialog**, allowing you to alter a variety of settings that affect the look, feel, and performance of the GIMP. If you want to customize GIMP, this is the place to do it.

Questa voce mostra la finestra delle **preferenze**, che permette di impostare una varietà di parametri che consentono di modificare l'aspetto, il comportamento e le prestazioni di GIMP. Se si vuole personalizzare GIMP, questo è il modo per farlo.

10.2.4. Dialogs

Figure 10.7. The Dialogs submenu of the File menu of Toolbox



This item shows a submenu containing a list of available dialogs that may be useful during image editing – patterns, palettes, brushes, etc. You can open and close dialogs as needed, or, if you want them to stay around, you can dock them.

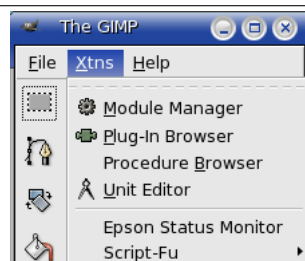
10.2.4.1. Activate Submenu

- You can find this submenu in the Toolbox: **File → Dialogs**

10.3. Xtns

10.3.1. Xtns

Figure 10.8. Contents of the Xtns menu



This odd name is simply the abbreviation of “Extensions”. You will find there commands to support extensions and to select among several Scrip-Fu.

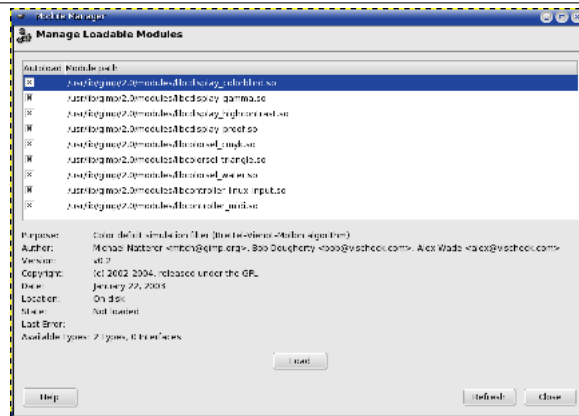
You can find commands that are not described here. They don't belong to GIMP itself but have been added by some device.

10.3.2. Module Manager

Selecting this item displays the modules that are available to The GIMP. You can also control which modules are loaded the next time the GIMP is launched, affecting functionality and launch time. Modules are dynamically loaded libraries, loaded by the GIMP while it is running, that perform functions such as color-choosing and display filtering. Currently only a few modules exist, and they are loaded automatically at startup, so you will probably not find it necessary to use.

10.3.2.1. Description of the dialog window Description de la fenêtre de dialogue

Figure 10.9. Dialog window “Module Browser”



10.3.3. Unit Editor

Selecting this item displays the Unit Editor dialog, which not only details the units that are currently being used, but also allows the creation of new units for use within the GIMP.

10.3.3.1. Activate Command

- You can find this command in the menu-bar of Toolbox under **Xtns** → **Unit Editor**>

10.3.3.2. Description of the dialog window

10.3.4. Plug-In Browser

This item displays both a list and a tree-based hierarchy of all the loaded plug-ins that The GIMP has loaded. If you want to use a plug-in, this is not the place to access it; you can get to it via the **Filters** menu in the individual image menubars.

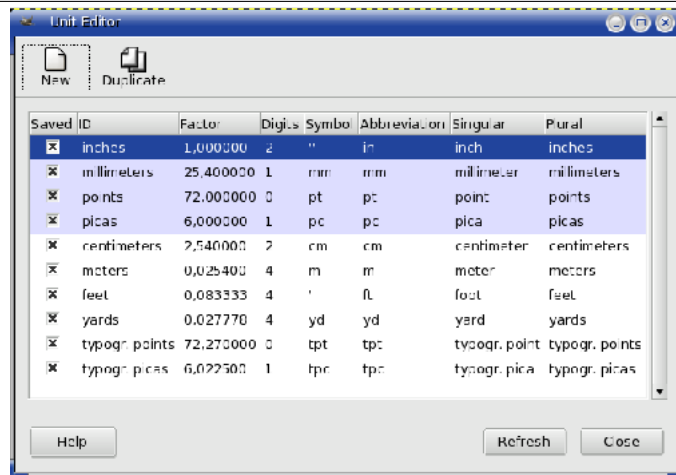
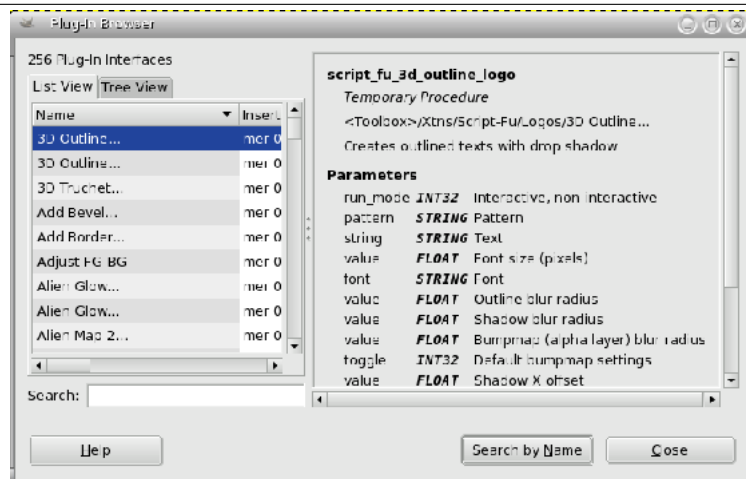
10.3.4.1. Activate Command

- You can find this command in the menu-bar of Toolbox under **Xtns** → **Plugin Browser**

10.3.4.2. Description of the dialog window Description de la fenêtre de dialogue

10.3.5. Procedure Browser

This item displays the available procedures in the PDB. This is mainly intended for advanced uses, such as script writing, and may not be particularly relevant to everyday users.

Figure 10.10. Dialog window “Unit editor”**Figure 10.11.** Dialog window “Plug-In Browser”

10.3.6. Script-Fu

This item displays a submenu containing many Script-Fu scripts and options including the Script-Fu console. Script-Fu is a language for scripting GIMP operations, so that sequences of them can be executed in an automated way.

10.4. Help

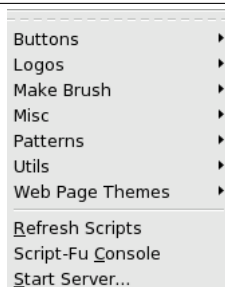
10.4.1. Help

Selecting this item displays the help browser. The used browser is defined in the Help System section of Preferences. This browser may be the built-in Gimp help browser, or a Web browser you can choose.

TIP



If this does not seem to work, please verify that you have the Gimp User Manual installed. You can find the last updated help on <http://docs.gimp.org/en/index.html>

Figure 10.12. The Scrip-Fu submenu of the Xtns menu

10.4.1.1. Activate Command

- You can find this command in the Toolbox menu: **Help** → **Help**
- or by using the F1 shortcut.

10.4.2. Context Help

Selecting this item changes the behaviour of the pointer such that the next click will display help for the clicked item, if available. This item is mainly present as an aid to the clueless: you can also access context help at any time simply by pressing the "F1" key with the pointer over the thing for which you want help.

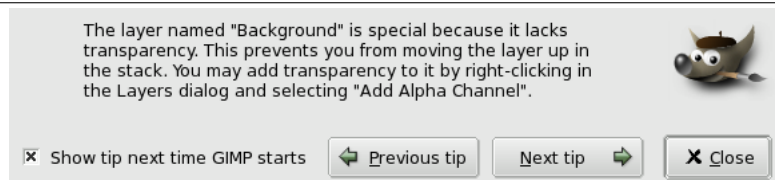
10.4.2.1. Activate Command

- You can find this command in the Toolbox menu: **Help** → **Context Help**
- or by using **Shift-F1** shortcut.

10.4.3. Tip of the Day

This item displays the Tip of the Day dialog. This dialog contains useful tips to help you gain a better understanding of some of The GIMP's nuances. New users will find it very valuable to pay attention to these, which often suggest ways of doing something that are much easier or more efficient than more obvious approaches.

10.4.3.1. Description of the dialog window

Figure 10.13. Dialog window "Tip of the day"

10.4.4. About

This item shows the About dialog. This dialog gives information about your current release of The GIMP and the many authors who wrote it.

10.4.4.1. Activate Command

- You can find this command in the Toolbox menu: **Help** → **About**

10.4.4.2. Description of the dialog window

Figure 10.14. Dialog window “About”



10.4.5. The GIMP Online

This item displays a submenu containing several helpful website addresses. If you select one of the items listed, your web browser will attempt to open the indicated site.

10.5. File

10.5.1. File

Figure 10.15. The File menu of image

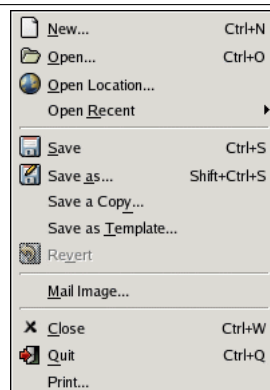
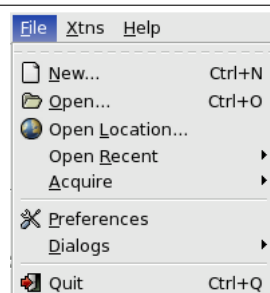


Figure 10.16. The File menu of Toolbox



You can find the File menu both in Toolbox menu and Image menu. Some commands only are common.

10.5.2. New

The dialog allows you to create a new empty image and to set its specifications. The created image is shown in a new image window. You may have more than one image on your screen.

The Dialog for creating a new image can be called in the following ways, from the toolbox and image-menu: **File** → **New**.

You can also open the Dialog by using a keyboard shortcut: **Ctrl+N**

Figure 10.17. The New Image dialog

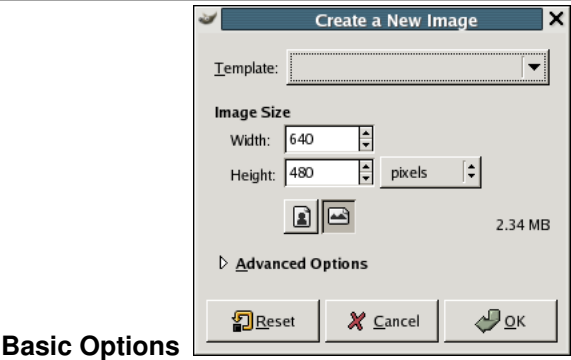
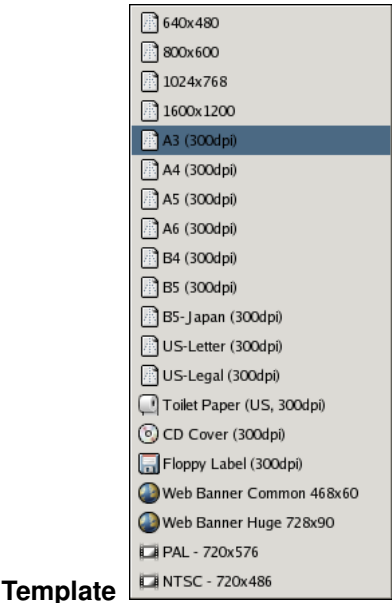


Figure 10.18. Template menu (default)



Instead of filling all the numbers in by hand, you can choose the dimensions of the image from a menu of templates, representing shapes that are more or less commonly useful. If there is an image shape that you use often, and it does not appear in the list, you can create a new template using the **Templates** dialog.

Image Size Here you set the width and height of the new image. The default units are pixels, but you can switch to some other unit if you prefer, using the adjoining menu. If you do, note that the resulting pixel size will be determined by the X and Y resolution (which you can change in the **Advanced Options**), and by the setting of "Dot for Dot", which you can change in the **View** menu.

When you open a new image from the File menu of the Toolbox, its default size is that defined in Preferences. If you open it from an existing image, this size is that of this image.

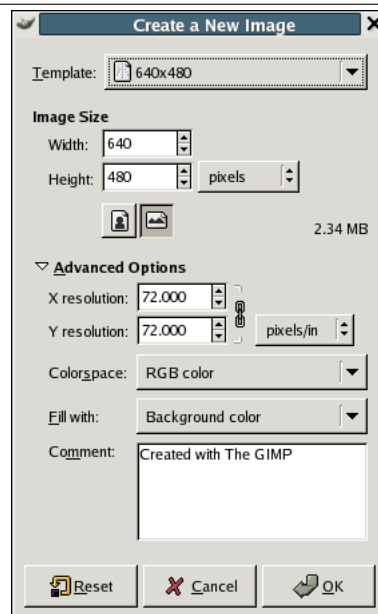
NOTE



Please keep in mind, that every Pixel of an image is stored in the memory. If you're creating large files with a high density of pixels, Gimp will need some time for every function you're applying to the image.

Portrait/Landscape buttons These buttons toggle between Portrait and Landscape mode. Concretely, their effect is to exchange the values for Width and Height. If the X and Y resolutions are different (in Advanced Options), then these values are exchanged also. On the right, image size, screen resolution and color space are displayed.

Figure 10.19. New Image dialog (Advanced Options)

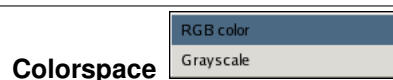


Advanced Options

These are options that will mainly be of interest to more advanced users. (Gimp 2.0 does not distinguish between Basic and Advanced Options; all of the options are visible at the same level.)

X and Y resolution These values come into play mainly in relation to printing: they do not affect the size of the image in pixels, but they determine its size on paper when printed. They can also affect the way the image is displayed on the monitor: if "Dot for Dot" is switched off in the **View** menu, then at 100% zoom, Gimp attempts to display the image on the monitor at the correct physical size, as calculated from the pixel dimensions and the resolution. The display may not be accurate, however, unless the monitor has been calibrated. This can be done either when Gimp is installed, or from the Display tab of the Preferences dialog.

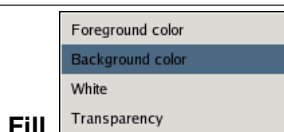
Figure 10.20. Colorspace menu



You can create the new image as either an RGB image or a grayscale image. You cannot create

an indexed image directly in this way, but of course nothing prevents you from converting the image to indexed mode after it has been created.

Figure 10.21. Fill menu



You have four choices for the solid color that will fill the new image's background layer:

- The Foreground color as shown in the Main Toolbox.
- The Background color as shown in the Main Toolbox.
- White
- Transparent. If this option is chosen, then the Background layer in the new image will be created with an alpha channel; otherwise not.

Comment You can write a descriptive comment here. The text will be attached to the image as a "parasite", and will be saved along with the image by some file formats (but not all of them).

10.5.3. Open

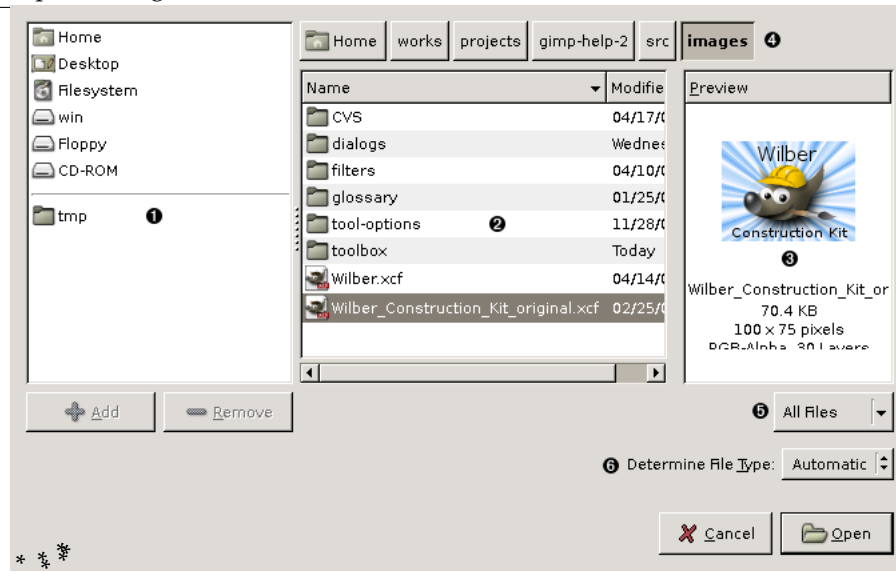
This command activates a dialog that allows you to load an existing image from your hard-drive or an external medium. For alternative, and sometimes more convenient, ways of opening files, see the [Files](#) section.

10.5.3.1. Activate Dialog

- The dialog for opening an image file can be called from the toolbox or from an image menu, as **File → Open**.
- You can open the Dialog by using the keyboard shortcut **Ctrl+O**.

10.5.3.2. File browsing

- *. The left panel is divided into two parts. In the upper part you have your main directories and your storage devices; you can't modify this list. In the lower part, you have a list of bookmarks; you can add or remove *bookmarks*. To add a bookmark, you select a directory or a file in the middle panel and you click on the **Add** in the left panel. You can delete a bookmark by selecting it and clicking on the **Remove** button.
- *. The middle panel displays a list of the files in the current directory. You select a file by a single left click (a double left click opens the file directly; if you have selected a file different from the current one, a message warns you before overwriting).
Right-clicking on the middle panel leads to the "Open Location" dialog that allows you to type a path to a file (you can also open this dialog by **Ctrl+L**).
- *. The selected image is displayed in the *Preview* if it is an image created by GIMP. File size, resolution and composition are displayed below preview.

Figure 10.22. Open Dialog**TIP**

If your image has been modified by another program, click on preview to update it.

- *. Above the middle panel, the path of the current directory is displayed: you can navigate along this path by clicking on an element.
- *. "All files" by default. This means that all file types will be displayed in the middle panel, even if they are not image. You can *filter* the list for a particular file type.
- *. **Select File Type:** In most cases you don't need to pay any attention to this, because GIMP can determine the file type automatically. In a few rare situations, neither the file extension nor internal information suffice to tell GIMP the file type. If this happens, you can set it by selecting it from the list.

10.5.4. Open Location

This item displays the **Open Location** dialog, allowing you to load an image from a network location specified by URI, in any of the formats that GIMP supports, or from a path to your hard disk or any drive .

TIP

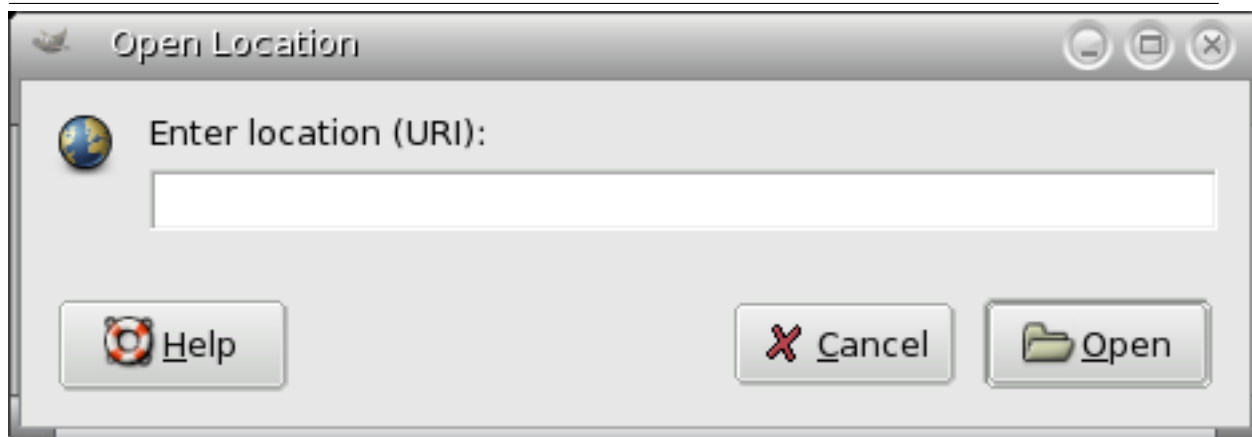
When you are visiting an Internet site, you can right click on an image and choose "Copy link address" in the drop-down menu. Then paste it in the "Open Location" dialog to open it in Gimp.

10.5.4.1. Activate Command

- You can find this command in the Tool box menu and the image menu: **File** → **Open Location**

10.5.4.2. Description of the dialog window

Figure 10.23. Dialog window “Open Location”



10.5.5. Open Recent

Selecting it shows a submenu with the names of files that you have opened recently in GIMP. Just choose a name with the pointer to reopen it. You can customize the number of items shown in the menu, by changing the “Open Recent Menu Size” value in the [Interface](#) page of the Preferences dialog. See the [Document History dialog](#) section for more information.

10.5.5.1. Activate Dialog

- This menu item can be reached from the toolbox or image menus, as **File** → **Open Recent**,
- or by using the keyboard shortcut **Ctrl-O**.

10.5.6. Open as Layer

This command opens the “Open Image as layer” dialog, identical to the [Open Image](#). So, you can open an image file that will be copied to the Layer Dialog, at top of the stack.

10.5.6.1. Activate Dialog

- This command can be accessed from an image menubar as **File** → **Open as layer...**
- The default short cut is **Ctrl-Alt-O**.

10.5.7. Save

If the image has not previously been saved, then “Save” does the same thing as “Save As”.

If you quit your image without saving it, a message will ask you if you actually want to do so, provided that the “Confirm closing of unsaved images” option is checked in the Preferences/Environment dialog.

10.5.7.1. Activate Dialog

- The “Save” command, activated from an image menu as **File** → **Save**,
- or from the keyboard using the shortcut **Ctrl-S**, saves the image to a file. If the image has been saved previously, it will automatically be saved to the same location, using the same file name, file type, and options. To save it differently in any respect, use either **Save As** or **Save A Copy**.

10.5.8. Save as

Activating this command brings up the “File Save” dialog. In its basic form, as shown above, this gives you an entry to use to assign a name to the file, and a dropdown list of bookmarks to use to select a directory to save it in. Normally the file format is determined by the extension you use in the file name (i.e., .jpg for a JPEG file). You can use the “Select File Type” option expander to pick a different file type, but you should avoid doing this unless absolutely necessary, because it will confuse people.

If the directory you want is not in the list of bookmarks, click on “Browse for other folders” to expand the dialog into its full form. You can find an explanation of the layout, and help on creating and using bookmarks, in the **Files** section.

If you have saved the image previously and don’t need to change the file name or any choices for options, you can use the **Save** command instead.

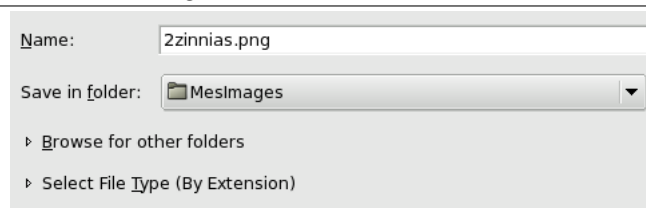
10.5.8.1. Activate Dialog

- This command can be found in an image menu as **File** → **Save as**.
- Default shortcut is **Shift+Ctrl+ S**.

10.5.8.2. The Basic Save-as Dialog

The “Save as” dialog takes on two appearances: a “basic save as” that is displayed when you use save-as for the first time during the session, and a “browser save-as” that persists all along the session once it’s been used.

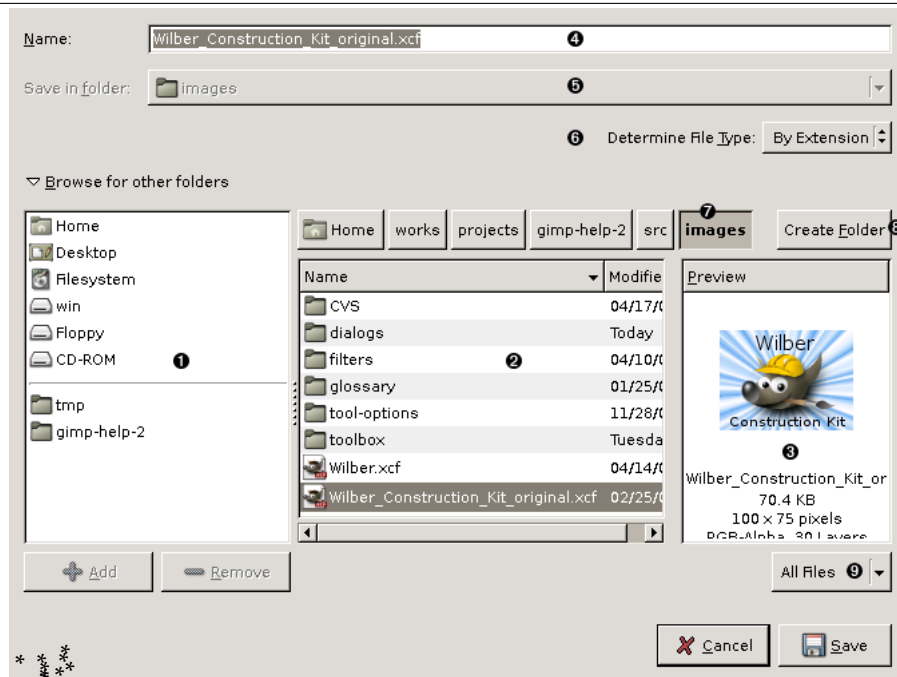
Figure 10.24. The basic File Save dialog



10.5.8.3. The Save Dialog (Browser)

- *. The left panel is divided into two parts. In the upper part you have your main directories and your storage devices; you can’t modify this list. In the lower part, you have a list of bookmarks; you can add or remove bookmarks.
- *. The middle panel displays a list of the files in the current directory. You select a file by a single left click (a double left click opens the file directly; if you have selected a file different from the current one, a message warns you before overwriting).

Right-clicking on the middle panel leads to the *Show Hidden Files* command.

Figure 10.25. The Save Dialog (Browser)

- *. The selected image is displayed in the *Preview* if it is an image created by GIMP. File size, resolution and composition are displayed below preview.

If your image has been modified by another program, click on preview to update it.

- *. Here, you have to assign a name to the file
- *. This dropdown list is available only in the basic form of the dialog: it provides a list of bookmarks to select a directory to save your file in.
- *. Above the middle panel, the path of the current directory is displayed: you can navigate along this path by clicking on an element.
- *. If you want to save the image into a folder that doesn't yet exist, you can create it by clicking "Create Folder" and following the instructions.
- *. "All files" by default. This means that all file types will be displayed in the middle panel, even if they are not image. You can *filter*> the list for a particular file type.
- *. There, you have to select your file format for saving. If you have selected *By extension*, file type will be determined by the extension you have added to the name, for instance ".jpg" for the JPEG format.

NOTE



To preserve all the components of your image on saving - Layers, channels...-, use the ".xcf" format.

10.5.9. Save a Copy

"Save a Copy" does the same things as the **Save** command, with one important difference. It always asks for a file name, saves the image into the specified file, but does neither change the name of the active image nor marks it as "clean". The effect of this is that if you try to delete the image, or exit from GIMP, you will be informed that the image is dirty and given an opportunity to save it.

This function is useful, when you want to save a copy of your image in its current state, but continue to work with the original file without an interruption.

10.5.9.1. Activate Dialog

- This command can be accessed from an image menubar as **File** → **Save a Copy....** It does not have a default shortcut.

10.5.10. Save as Template

"Save as Template" creates a template with the same dimensions and colorspace as the image. A dialog pops up asking you to name the new template, after which it is saved so that it becomes available in the **New Image** dialog. If you give a name that already exists, a unique name is generated by appending a number to it. You can use the **Templates** dialog to modify or delete templates.

10.5.10.1. Activate Dialog

- This command can be accessed from an image menubar as **File** → **Save as Template....** It does not have a default shortcut.

10.5.11. Revert

"Revert" causes the image to be reloaded from disk, so that it will look just like it did the last time it was saved—unless, that is, the file has in the meantime been overwritten by you or some application other than GIMP, in which case the new contents will be loaded.

WARNING



For technical reasons, when GIMP reverts a file, it actually closes the existing image and creates a new image. Because of this, reverting an image is not undoable, and causes the undo history of the image to be lost. GIMP tries to protect you from losing your work in this way by asking you to confirm that you really want to revert the image.

10.5.11.1. Activate Dialog

- **File** → **Revert**. It does not have a default shortcut.

10.5.12. Page Setup

This function does not actually belong to Gimp: it calls your system page setup module to fix printer settings.

10.5.13. Print

This function does not actually belong to Gimp: it calls your system printing module to fix printer settings.

10.5.14. Close

“Close” closes the image and removes its window. Closing an image is not undoable: once it is closed, everything is gone, including the undo history. If the image is not clean—that is, if you have changed it since the last time you saved it—then you will be asked to confirm that you really want to close it. Note that images are marked as clean when saved to a file even if the file format chosen does not preserve all information present in the image, so it is a good idea to think for a moment about what you are doing before closing an image. If there is the slightest possibility that you will regret it, it can’t hurt to save a copy as an **XCF** file.

10.5.14.1. Activate Dialog

- This command can be accessed from an image menubar as **File** → **Close**,
- or by using the keyboard shortcut **Ctrl-W**.
- In most environments, it can also be executed by clicking a “Close” button somewhere on the image window titlebar. The location and appearance of this button are determined by the windowing system and window manager.

10.5.15. Quit

“Quit” causes GIMP to close all images and exit. If there are any images open that are not marked as “clean”, you are notified of this and given an opportunity to cancel the action. (In GIMP 2.2., you are given a list of the unsaved images and asked which of them, if any, you would like to save before quitting.) Note that if you have a large number of images open, or are using a large proportion of the RAM on your system, it may take a little while for everything to shut down.

10.5.15.1. Activate Dialog

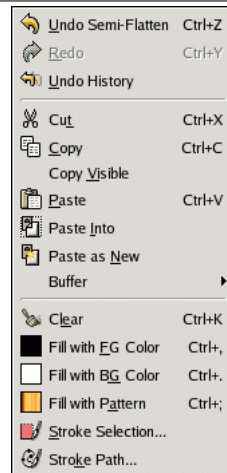
- This command can be accessed from the Toolbox or an image menubar as **File** → **Quit**,
- or by using the keyboard shortcut **Ctrl-Q**.
- In most environments, it can also be executed by clicking a “Close” button somewhere on the Toolbox window. The location and appearance of this button are determined by the windowing system and window manager.

10.6. Edit

10.6.1. “Edit” menu entries

In this section, you will find help for commands in the **Edit** menu item.

You may find in this menu commands that are not described. They don’t belong to GIMP itself, but have been added by some plug-ins.

Figure 10.26. Contents of the Edit menu

10.6.2. Undo

"Undo" allows you to revert an image back one step in the drawing or editing process. Almost anything you do to an image can be undone in this way. Further undo operations may be performed according to the number of undo levels configured in the [Environment](#) page of the Preferences Dialog. See the section on [Undoing](#) for more information about GIMP's very sophisticated "undo" functions.

The operation that has been "undo" is not immediately lost: you can get it back by using the [Redo](#) right after. But if you do another operation the "undo" will be lost definitively.

10.6.2.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Edit** → **Undo**,
- or by using the keyboard shortcut **Ctrl-Z**.

10.6.3. Redo

"Redo" reverses the effects of "Undo". Each "undo" action can be reversed by a single "redo" action, until the image returns to its final state; you can alternate "undo" and "redo" as much as you please. Note that "redo" is only available if the last action performed was an "undo". If you act on the image in any way after undoing something, then the states that could otherwise have been reached by redoing are lost, and there is no way to recover them. See the [Undoing](#) section for more information.

To get an undone operation back, use the [Undo History](#) dialog.

10.6.3.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Edit** → **Redo**,
- or by using the keyboard shortcut **Ctrl-Y**.

10.6.4. Undo History

"Undo History" activates the [Undo History dialog](#), which allows you to jump back and forth in the undo history of the image. This is especially useful when you work on difficult tasks, where you often need to undo several steps at once.

Click on a thumbnail to access to the corresponding step. "Undo" and "Redo" buttons bring no more. As for the "Clear undo History", it may be useful in case of a complex work to relieve your computer memory.

10.6.4.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Edit** → **Undo History**. There is no default keyboard shortcut.

10.6.5. Cut

“Cut” deletes the contents of GIMP’s selections, and saves them in a clipboard so that they can later be pasted using the Paste , Paste Into , or Paste As New commands. If no selection is made, the entire current layer will be cut. The areas whose contents are cut out are left transparent if the layer has an alpha channel, or filled with the layer’s background color otherwise.

NOTE



“Cut” only works on the current active layer. Any layers above or below the active one are ignored.

10.6.5.1. How to call the command

- You can find this command through **Edit** → **Cut**,
- or by using the keyboard shortcut **Ctrl-X**.

10.6.6. Copy

The Copy command allows the user to make a copy of the current selection, which is then stored in The GIMP Clipboard . The information can be recalled using the using the **Paste**, **Paste Into**, and **Paste As New** commands. If no selection has been made, the entire current layer will be copied. “Copy” will only work on the current active layer. Any layers above or below the active one are ignored.

10.6.6.1. How to call the command

- You can find this command through **Edit** → **Copy**,
- or by using the keyboard shortcut **Ctrl-C**.

10.6.7. Copy Visible

Contrary to the **Copy** command which copies the current layer, the “Copy Visible” command copies the visible layers (or the selection content), that ones you have marked with an “eye”.

NOTE



Please note, that the informations about layers are lost during this copy. If you paste the clipboard content you have got so, you will get only one layer, fusion of all marked layers.

10.6.7.1. How to call the command

- You can find this command through **Edit** → **Copy Visible**.

10.6.8. Paste

The Paste command puts whatever is in The GIMP Clipboard from the last Copy or Cut command into the current image. The pasted section will be placed as a Floating Selection and is shown as a separate layer in the Layers Dialog .

If there is an existing selection on the canvas, it will be used to align the pasted data. Any data pasted when a selection already exists will be pasted using the selection as a center point. If the selection is to be used as a clipping region for the pasted data, this can be achieved by using the Paste Into command.

NOTE



You can only have one floating selection at any one time and cannot work on a layer while there is a floating selection.

10.6.8.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Edit/ Paste....**
- The **Ctrl-V** key combination will call the Paste function.

10.6.9. Paste Into

The Paste Into command acts in a similar method to the Paste command. The primary difference becomes apparent if there is a selection within the canvas. Unlike a Paste which will merely center the pasted image data over the selection and remove the old selection replacing it with its own, Paste Into will clip the pasted data using the existing selection. The new selection can be moved as per normal, but will always remain clipped by the original selection area.

If no selection exists, the command will place the data from the Clipboard in the center of the canvas as per the Paste command.

10.6.9.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Edit/ Paste Into....**

10.6.10. Paste as New

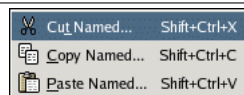
Any data that is pasted from the Clipboard using the Paste As New command will create a new image that contains the pasted data. If the data that is pasted is not contained within a rectangle or a square area, any regions that cannot reach the canvas boundary are left transparent. Of course, you must Copy your selection before using this command which allows you to get an image with the same dimensions as the selection.

10.6.10.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Edit/ Paste as New....**

10.6.11. Buffers

The commands in this submenu operate on *named buffers*. You can use the **Buffers dialog** to view and manage any named buffers you have created.

Figure 10.27. The Buffer submenu of the Edit menu

10.6.11.1. Activate Dialog

- This command can be accessed from an image menubar under **Edit** → **Buffer**.

10.6.11.2. Cut named

This command cuts out the contents of the selection from the active layer in the usual way, but instead of storing the contents in the global clipboard, it stores them in a special buffer that you name using a dialog that pops up.

HOW TO CALL THE COMMAND

- You can get to this command through the image menu: **Edit** → **Buffer** → **Cut**
- or through the **Shift-Ctrl-X** shortcut.

10.6.11.3. Copy Named

This command copies the contents of the selection from the active layer in the usual way, but instead of storing the contents in the global clipboard, it stores them in a special buffer that you name using a dialog that pops up.

HOW TO CALL THE COMMAND

- You can get to this command through the image menu: **Edit** → **Buffer** → **Copy**
- or through the **Shift-Ctrl-C** shortcut.

10.6.11.4. Paste Named

This command actually just brings up the **Buffers dialog**. By selecting one of the listed buffers, and pressing one of the buttons at the bottom, you can either **Paste Buffer**, **Paste Buffer Into**, or **Paste Buffer as New**.

HOW TO CALL THE COMMAND

- You can get to this command through the image menu: **Edit** → **Buffer** → **Paste**
- or through the **Shift-Ctrl-V** shortcut.

10.6.12. Clear

The Clear function allows the user to delete everything contained within the current selection. If there is no current selection, the contents of the active layer will be removed. If the active layer has an Alpha channel, the deleted selection will be made transparent. The original color can be restored to the transparent area using the Eraser tool if it is set to Anti-Erase. If the layer does not have an alpha channel, the deleted area will be filled using the current background color.

Clearing a selection will not delete the selection itself. Unlike Cut, clear will not place the deleted contents in the Clipboard and the contents of the clipboard are unaffected.

10.6.12.1. How to call the command

- You can find this command through **Edit** → **Clear...**
- You can also call the Clear function by using the **Ctrl-K** shortcut.

10.6.13. Fill with FG Color

“Fill with FG Color” causes the image’s selection to be filled with the solid color shown in the foreground part of the Color Area of the Toolbox. (The color is also shown to the left of the menu entry.) If some areas of the image are only partially selected (for example, as a result of feathering the selection), they are filled in proportion to their degree of selectness.

NOTE



Mind that if the image has no selection, the whole active layer will be filled.

10.6.13.1. How to call the command

- You can find this command through **Edit** → **Fill with FG Color**,
- or by using the keyboard shortcut **Ctrl-.**

NOTE



You can also fill a selection by click-and-dragging from the Toolbox foreground color.

10.6.14. Fill with BG Color

“Fill with BG Color” causes the active layer selection to be filled with the solid color shown in the Background part of the Color Area of the Toolbox. (The color is also shown to the left of the menu entry.) If some areas of the image are only partially selected, they are filled in proportion to their degree of selectness.

NOTE



Mind that if the image has no selection, the whole active layer will be filled.

10.6.14.1. How to call the command

- You can find this command through **Edit** → **Fill with BG Color**,
- or by using the keyboard shortcut **Ctrl-.**

NOTE



You can also fill a selection by click-and-dragging from the Toolbox background color.

10.6.15. Fill with Pattern

“Fill with Pattern” causes the image’s selection to be filled with the pattern shown in the Brush/Pattern/Gradient area of the Toolbox. (The pattern is also shown to the left of the menu entry.) If some areas of the image are only partially selected, they are filled in proportion to their degree of selectness.

You can select another pattern by using the [Pattern Dialog](#).

NOTE



Mind that if the image has no selection, the whole active layer will be filled.

10.6.15.1. How to call the command

- You can find this command through **Edit** → **Fill with Pattern**,
- or by using the keyboard shortcut **Ctrl-;**.

10.6.16. Stroke Selection

You have two operating methods to stroke a selection, using or without using a paint tool:

NOTE



This command is active only if there is a selection in your image.

10.6.16.1. Activate Dialog

- This command is found at **Edit** → **Stroke Selection...**
- You can also get to it via the [Selection Editor](#).

10.6.16.2. Options

NOTE



You can find documentation about these options in the [Stroke Path](#) section.

10.6.17. Stroke Path

You have two operating methods to stroke a path, using or without using a paint tool.

NOTE



This command is active only if there is a path in your image.

10.6.17.1. Activate Dialog

- This command is found at **Edit** → **Stroke Path...**
- It is also available by clicking on the button with the same name in the **Path dialog**.

10.6.17.2. Options

Stroke line The foreground color of the Toolbox is used. You don't use any paint tool, but many many parameters are available:

Line Width You can set the stroke width using the slider or the text box. Default is pixels, but you can choose another unit by the arrow button.

Cap Style You can choose the shape of the ends of an unclosed path, either *Butt*, *Round* or *Square*.

Join Style You can choose the shape the path corners will have by clicking on *Miter*, *Round* or *Bevel*.

Miter limit In joinery, a miter joint is a joint of two boards forming an acute angle. Here, it's the angle between two path segments. If stroke is wide, the angle tip will look blunt. The Miter Limit function fills the gap between the borders of the path segments extended until they intersect, giving so the angle a tapered tip.

Dash Pattern Dash is shown at a pixel level in a small box. You can modify it as you want. An area with thin vertical lines inside the box shows the limits of the pixels. If you click on it you add a pixel to the dash. If you Shift-click, you remove a pixel.

Dash Preset You can select a dash pattern in the drop-down list. box.

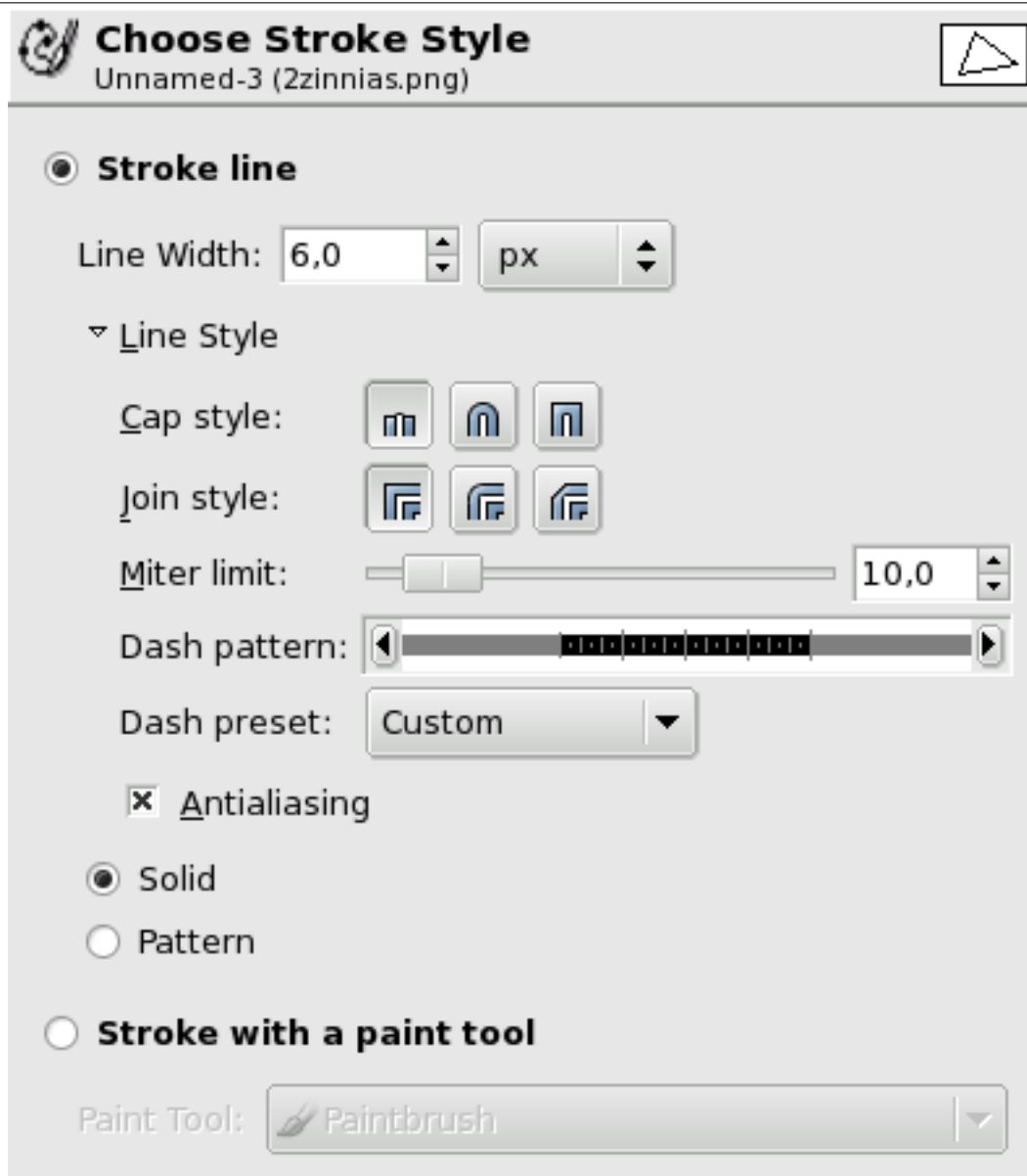
Anti-aliasing Oblique or rounded strokes may have stepped borders. This option smoothes them.

Style You can choose either the *Solid* or the *Pattern* style. The used pattern will be the selected pattern from the Toolbox.

Stroke using a Paint Tool

Paint Tool You can select a paint tool in the drop-down box to enjoy all its options in order to stroke the path.

Figure 10.28. Options



10.7. Select

10.7.1. Selection

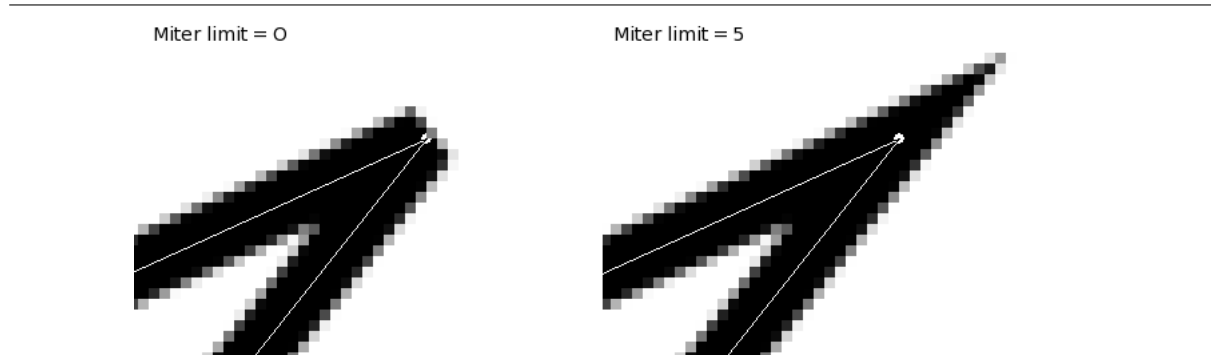
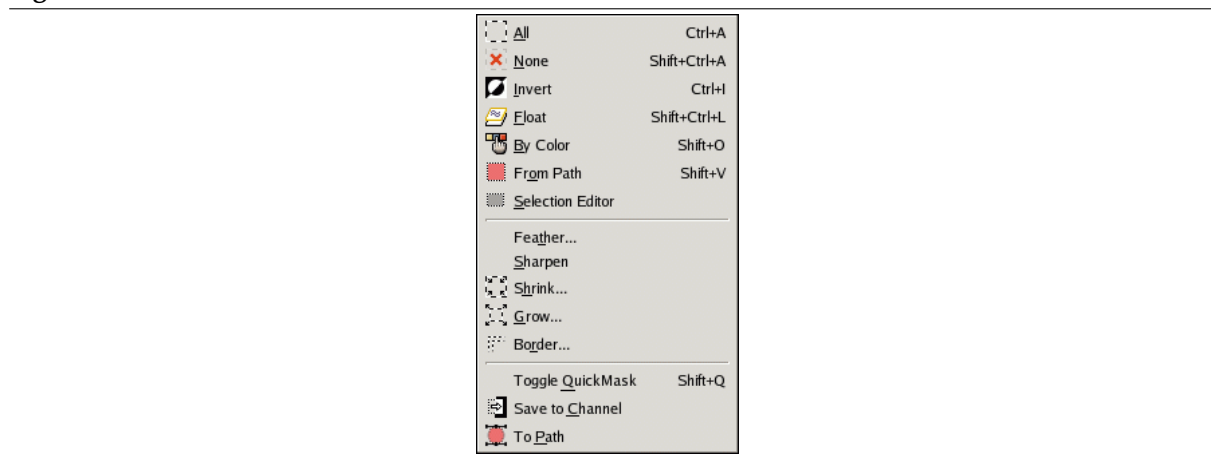
In this section, you will find the commands of the “Selection” entry of the image menu-bar. You can have some more, which don’t belong to GIMP itself but have been added by some plug-ins.

10.7.2. Select All

The Select All command will create a new selection that encompasses everything on the active layer.

10.7.2.1. Activate Dialog

- This command is found at **Select** → **All** in each image menu. You can also get to it via the Selection Editor.
- The **Ctrl-A** will call the Select All function

Figure 10.29. Miter limit**Figure 10.30.** Contents of the Select menu

10.7.3. None

The None command cancels all selections. If nothing is selected, this function will do nothing. A floating selection is not affected.

10.7.3.1. Activate Dialog

- This command is found in **Selection** → **None**. You can also get to it via the **Selection Editor**.
- The **Shift+Ctrl+A** will call the None function

10.7.4. Invert

The Invert selection command will change the current selection such that everything previously unselected will now be selected and vice versa. If there is no selection, the entire image area will be selected.

10.7.4.1. Activate Dialog

- This command is found at **Select** → **Invert** in each image menu. You can also get to it via the **Selection Editor**.
- The **Strg-I** will call the Invert function

10.7.5. Float

Select Float converts a normal selection to a Floating Selection.

Floating selections were used in the first ages of GIMP to perform operations on a limited part of the image. Nowadays, you can do that more easily with layers. This option is persisting. More, a float is automatically created when you move a selection using the move tool without pressing the ALT key (or Shift Alt in Linux). A temporary layer is created in the Layer Dialog. Its name is "Floating Selection". No more operations can be performed on another layer until the float has been anchored.

Once the wanted operations have been performed on the floating selection, you have to *anchor* it, that is to say put it in a normal layer, more often the original layer, the last active, by clicking on the anchor button of the Layer Dialog or the "Anchor Layer" option of the Layer menu. You can also put it in a new layer by clicking on the New Layer button of the Layer Dialog.

TIP



If you use "Layer Boundary Size", you may have some difficulties in selecting the part of the image you want have in the layer. If you make a rectangular selection and transform it into a float, you can anchor it in a new layer. You only have then to remove the old layer.

10.7.5.1. Activate Dialog

- This command is found at **Select** → **Float** in each image menu.
- This function is also available through the **Shift-Ctrl-L** key combination.

10.7.6. By Color

This is just an alternate way of activating the "Select by Color" tool, one of the basic Selection Tools. For information on how to use it, see [Select By Color](#)


10.7.6.1. Activate Dialog

- This command is found at **Select** → **By Color** in each image menu.
- Default shortcut is **Shift-O**

10.7.7. From Path

This command transforms the active path to a selection. If the path is not closed, it will be completed by a straight line linking both end points together. The path persists.

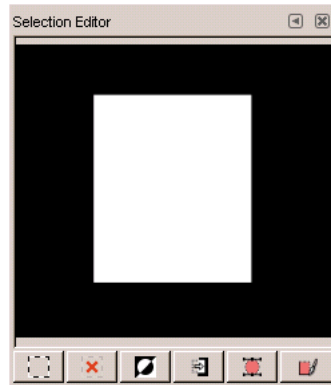
10.7.7.1. Activate Dialog

- This command is found at **Select** → **From Path** in each image menu.
- The same action is performed by clicking on the **Path to Selection** button in the Path dialog. 
- The **Shift-V** will call the From Path function by default.

10.7.8. Selection Editor

10.7.8.1. Activate Dialog

- This command is found at **Select** → **Selection Editor** in each image menu.

Figure 10.31. Options

10.7.8.2. Options

Buttons This editor gathers together several selection functions that you can access to by a simple click on a button:

- The **Select All** button.
- The **Select None** button.
- The **Select Invert** button.
- The **Save to Channel** button.
- The **To Path** button.
- The **Stroke Selection** button.

The display window There, selected areas of the image are white, non selected areas are black and partially selected are grey leveled. Clicking on this window acts as select-by-color: if somebody can explain that blindly function...

10.7.9. Feather

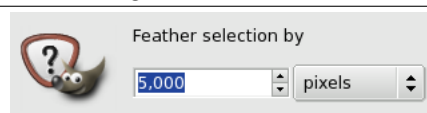
Feathering selection borders is normally provided by the *Feather Edges* option of the selection tools. This function allows you to take it up again.

You only have to enter the width of the feathered border in the text box, in pixels or any unit you can choose.

10.7.9.1. Activate Dialog

- This command is found at **Select** → **Feather** in each image menu.

10.7.9.2. Dialog description

Figure 10.32. The “Feather Selection” dialog

Feather selection by With this option, you can set width of the selection border feathering. Default unit of measurement is pixel, but you can change it by using the adjacent drop-down list.

10.7.10. Sharpen

Select Sharpen reduces the amount of blur or fuzziness about the edge of a selection. It performs the reverse of **Feather Selection**.

NOTE



Don't mistake this function for the "Sharpen" plugin.

10.7.10.1. Activate Dialog

- This command is found at **Select** → **Sharpen** in each image menu.

10.7.11. Shrink

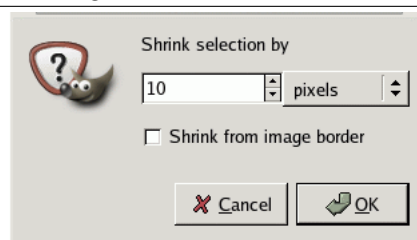
It reduces the size of the selected area, by moving each point on the selection boundary the specified distance farther away from the nearest edge of the image. Feathering is preserved, although the shape of feathering may be altered at corners or points of sharp curvature.

10.7.11.1. Activate Dialog

- This command is found at **Select** → **Shrink...** in each image menu.

10.7.11.2. Options

Figure 10.33. The Shrink Selection dialog



Shrink selection by Pixels are the default unit, but you can change this using the Units menu to the right.

Shrink from image border This option only matters if the selection overlaps the edge of the image. If it does, and the option is checked, then the selection will be shrunk away from the image border. If it is unchecked, the selection will continue to extend out to the image border.

10.7.12. Grow

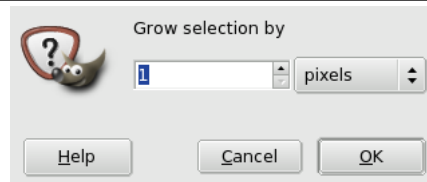
This command will increase the size of a selection in much the same way that the **Shrink** can be used to reduce the size of a selection area.

10.7.12.1. Activate Dialog

- This command is found at **Select** → **Grow**

10.7.12.2. Dialog description

Figure 10.34. The “Grow Selection” dialog window

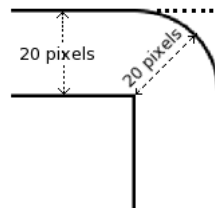


Grow selection by Here, you can set by how much your selection must be increased. The unit of measurement is pixel; you can change it by using the associated drop-down list.

10.7.12.3. A distinctive feature of rectangular selections

When you grow a rectangular selection, you get a selection with rounded corners. The following image explains why:

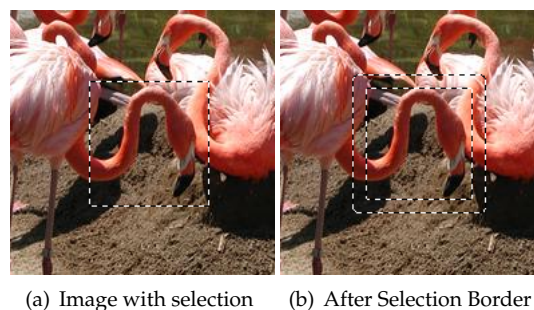
Figure 10.35. Why growing a rectangular selection gives rounded corners



To correct this, use the “Rounded Rectangle” command with a 0% radius.

10.7.13. Border

Figure 10.36. Example



(a) Image with selection (b) After Selection Border

Border select modifies an existing selection. The resulting selection will be rendered as a border built from the existing one.

You only have to enter the width of the border in the text box, in pixels or any unit you can choose.

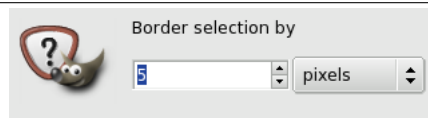
The inside width of the new selection will be half of the value set here and the outside width of the new selection will be the other half.

10.7.13.1. Activate Dialog

- This command is found at **Select** → **Border**

10.7.13.2. Options

Figure 10.37. The “Border” dialog window



Border selection by With this option, you can set width of the border selection. Default unit of measurement is pixel, but you can change it by using the adjacent drop-down list.

10.7.14. Rounded Rectangle

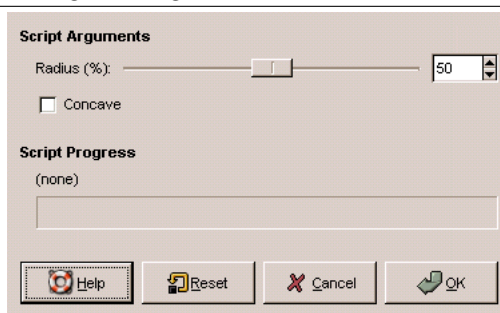
This script-fu converts a selection (rectangular, elliptic or else) to a rectangular selection with rounded corners. The *Radius* is a percentage of half the selection width or height, whichever the smaller. Select **Concave** if you want round edges to be indented. Rounded Rectangle works by adding circles to or subtracting circles from the selection.

10.7.14.1. Activate Dialog

- This command is found at **Select** → **Rounded Rectangle....**

10.7.14.2. Options

Figure 10.38. The Rounded Rectangle dialog



Radius With this option, you can set the radius of the corner circular design in percentage of the smallest of both width and height.

Konkav When this option is checked rounded corners will concave (towards inside), instead of convex (towards outside)

10.7.15. Toggle QuickMask

It has the same action as clicking on the small button in the bottom left corner of the image. See [Quick Mask](#)

10.7.15.1. Activate Dialog

- This command is found at **Select** → **Toggle QuickMask**
- Default shortcut is **Shift-Q**

10.7.16. Save to Channel

Channels are used for RGB colors and Alpha, and also to save selections. See [Channel Dialog](#)

10.7.16.1. Activate Dialog

- This command is found in **Select** → **Save to Channel**
- You can also get to it via the [Selection Editor](#).

10.7.17. To Path

This command transforms a selection into a path. Nothing is apparent but you can see this path in the Path Dialog and, by selecting the Path tool in toolbox, you can adapt the selection outline accurately. Further information regarding paths can be found on the [Paths dialog](#) page.

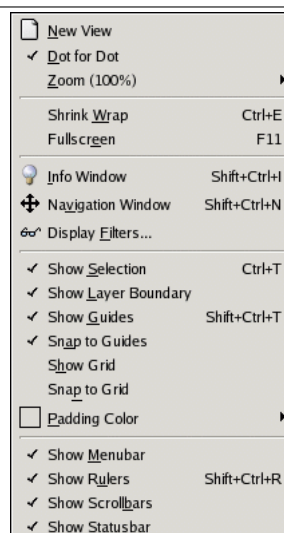
10.7.17.1. Activate Dialog

- This command is found at **Select** → **To Path**.
- You can also get to it via the [Selection Editor](#).

10.8. View

10.8.1. View

Figure 10.39. Contents of the View menu



The View menu contains commands that affect the visibility or appearance of the image and various elements of the interface.

You may find in this menu some commands that are not described: they have been added by some plug-ins and don't belong to GIMP itself.

10.8.2. New View

This command creates a new image window for the current image, which you can set up differently than the existing display. You can create multiple displays of any image: only the zoom level and other viewing options can differ, though. Any other changes made in one view are reflected in any other displays that show the same image. One common use for multiple views is if you are working on individual pixels, at a high zoom level: it may be useful for you to see at the same time the effects of your changes on the image as it would normally be viewed.

You can delete a new view by closing the window it creates. Closing the last remaining display for an image will cause the image itself to be closed, but if this would lead to any loss of data, you will be asked to confirm that you really want to do it.

10.8.2.1. Activate Dialog

- This command can be accessed from an image menubar as **View** → **New View**.

10.8.3. Dot for Dot

Turns “Dot for Dot” viewing on or off. When turned on, every pixel in the image is shown as one pixel on the screen, on condition that the zoom ratio is 1:1. When off, the image has its real size, that it will have when printed.

Another condition for the Dot-for-Dot to be effective is that the image resolution is set to the screen resolution in the **Preferences menu**.

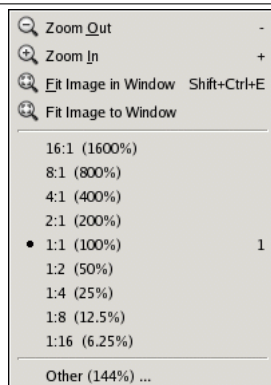
If your image is intended for a Web site, this option is suitable but not if it is intended for printing.

10.8.3.1. Activate Dialog

- This command is found at **View** → **Dot for Dot**

10.8.4. Zoom

Figure 10.40. The Zoom submenu of the View menu



Zooming means changing the magnification level of the image. Zooming in to an image is useful for pixel-level image modifications, and zooming out can be handy for working with broad effects. Note that zooming is not undoable, because it does not affect the image data, only the way it is displayed.

TIP



You will also find zoom possibilities at the bottom of the image (if the **status-bar** is displayed) and in the **Navigation dialog**

10.8.4.1. Activate Dialog

- These commands can be accessed from an image menubar, in the submenu **View** → **Zoom**.

10.8.4.2. Content of the Zoom submenu

Here are the available Zoom commands, along with their default keyboard shortcuts if any:

Zoom Out (Shortcut: -) Each time “Zoom Out” is used, the zoom factor is decreased by about 30%. There is a minimum zoom level of 6%.

Zoom In (Shortcut: +) Each time Zoom In is used, the zoom level is increased by a factor of around 30%. The maximum possible zoom level is 1600%.

NOTE



The keyboard shortcut for “Zoom In” has been a subject of some controversy, because this is a very commonly used operation, and on English keyboards it requires the Shift key to be pressed. (For European keyboards, it does not.) If you would like to have an easier shortcut, you can create a dynamic shortcut for it; see the help section for **User Interface** Preferences for instructions.

Fit Image in Window (Shortcut: **Shift-Ctrl-E**). This command zooms the image as large as possible while still keeping it completely within the window. Padding will probably show on two sides of the image, but not on all four sides.

Fit Image to Window This command zooms the image as small as possible without requiring any padding to be shown: it causes the image to fit the window perfectly in one dimension, and extend beyond the window borders in the other dimension.

A:B Here you have a series of menu entries for specific zoom levels, including, most importantly, the 100% zoom level, which has a simple keyboard shortcut: **1**

Other This command brings up a dialog that allows you to choose any zoom level you want, within the allowed limits of 6% to 1600%.

TIP



When you are working at a pixel level, use the **New view** command.

10.8.4.3. Magnify tool

Using menu entries described in this section is not the only way to zoom an image. The **Magnify tool** has similar purpose, but it has slightly different possibilities. It is especially useful if you want to fit a particular area of the image in window.

10.8.5. Shrink Wrap

This command resizes the window so that it precisely matches the dimensions of the image display at the current zoom level, unless this would cause it to be larger than the viewable area of the monitor. Note that you can make this happen automatically by setting the options “Resize window on zoom” and “Resize window on image size change” in the **Image Window** page of the Preferences dialog.

NOTE



Note that this behavior is not implemented by GIMP itself, but rather by the window manager, so it is possible that in some very broken environments it might not work, through no fault of GIMP's.

10.8.5.1. Activate Dialog

- This command can be accessed from an image menubar as **View** → **Shrink Wrap**,
- or by using the keyboard shortcut **Ctrl-E**.

10.8.6. Full Screen

This function toggles the full screen to display the image, but the image keeps its normal size. Right click on the image to access to the image menu if the menubar is not displayed. Default appearance in full screen mode is set in the **Preferences** menu.

NOTE



If you use GIMP under an *Apple Macintosh* computer, this function probably will not be available as Apple doesn't provide this essential functionality. Instead you can maximiser the image window by clicking on the *Green Button*, so that the image occupies the most of the screen area.

10.8.6.1. Activate Dialog

- This command can be found at **View** → **Full Screen**.
- The **F11** shortcut will toggle Full Screen mode by default.

10.8.7. Info Window

With this command, you can view informations about the active image and informations about the pixel under the mouse pointer.

10.8.7.1. Activate Dialog

- You can find this command in the image menu bar under **View** → **Info-window**.
- or by using the **Shift-Ctrl-I** shortcut.

Figure 10.41. Info Window

General	Cursor	Comment
Pixel dimensions: 139 x 132 pixels		
Print size: 1.158 x 1.109 inches		
Resolution: 119.99 x 118.999 dpi		
Scale ratio: 100.00		
Number of layers: 1		
Size in memory: 146 KB		
Display type: RGB Color		
Visual class: True Color		
Visual depth: 24		

The General Tab**10.8.7.2. Description of the Info Window**

The Info Window shows basic information about the Image, including its name and a thumbnail:

- *Pixel Dimensions*: Shows the image height and width in pixels.
- *Print Size*: Shows the size in current unit the image will have when printed. That's the "logical size" of the image.
- *Resolution*: Shows the image resolution in dot per inch (dpi), usually that of the screen.
- *Scale Ratio*: Shows the zoom factor of the active image.
- *Number of Layers*: No comment.
- *Size in Memory*: Shows the number of KB the image takes up in memory. This information is also displayed in the image window. This size is very different from the file size as you can see it in your browser. First, the displayed image is decompressed, then GIMP keeps a copy of the image in memory for Redo operations.
- *Display Type*: Shows the color mode of the active image.
- *Visual Class*: Shows the class of the number of colors of your screen: 256 colors, True Color...
- *Visual Depth*: Another mode to express the number of colors of your screen: with 8 bits you can code for 256 colors, with 16 bits to 256x256 and with 24 bits to 256x256x256 colors.

Figure 10.42. Cursor Tab

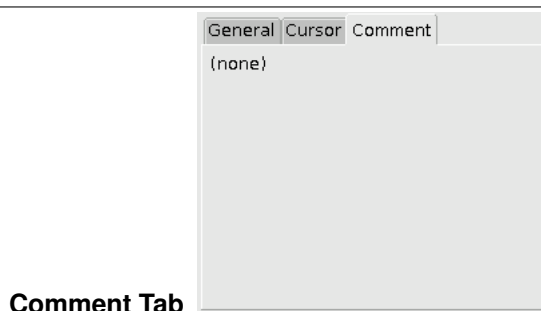
General		Cursor		Comment	
Pixels			Units		
X	n/a	X	n/a		
Y	n/a	Y	n/a		
Pixel values		RGB			
Red:	n/a	Red:	n/a		
Green:	n/a	Green:	n/a		
Blue:	n/a	Blue:	n/a		
		Hex:	n/a		

Cursor Tab

In this tab, color information is displayed when you move the mouse pointer on the image. It looks like the **Tool Color Picker** but doesn't display the color.

- *Pixels*: Coordinates of the pointed pixel. The origin (0,0) is in the upper left corner.
- *Units*: Distance of the pointed pixel from the origin, in the current unit, that selected when the image was created.
- *Pixel values*: Values in each channel, for RGB, HSL and CMYK modes are displayed, also the color hexadecimal code.

Probably, one day, this tab will be used to edit the comment that accompanies the image.

Figure 10.43. Comment Tab**Comment Tab**

10.8.8. Navigation Window

This menu opens the navigation window. Here you can zoom or move the image in its window. Using it is described at the [Navigation dialog](#) chapter.

10.8.8.1. Activate Dialog

- This command can be found at **View** → **Navigation Window**.
- The **Shift–Ctrl–N** shortcut will activate the Navigation Window.

10.8.9. Display Filters

The images you create, we hope, will be seen by many people on different systems. Your image, so wonderful on your screen, may look somewhat different to people with sight deficiency or on screen with different settings. Some informations may even become invisible.

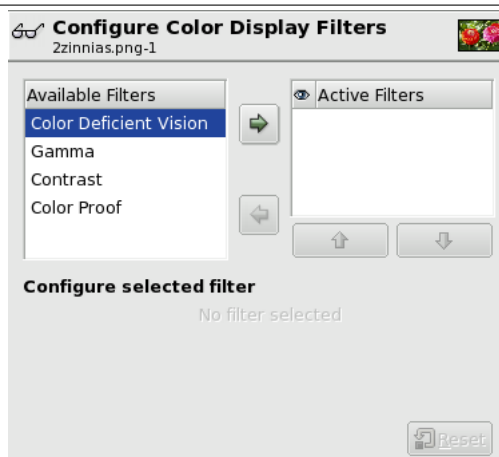
Display Filters allow you to view your image as if it was seen by people with sight deficiency or on a different screen. Don't misunderstand, these filters show you the image it was seen by people with sight deficiency or on a different screen, but they don't change the image at all. For that matter, if you save this shown image, you will save the original image, and you can't undo filter action with Ctrl-Z.

Available filters are for Color Deficient Vision, Gamma, Contrast and Color Proof:

10.8.9.1. Activate Dialog

- This command can be found in the image menu under **View** → **Display Filters**.

10.8.9.2. Dialog description

Figure 10.44. The Configure Color Display Filters dialog

This dialog has two small windows. In the left window, you can see **Available Filters**. You can move them to the right window by selecting them and clicking on the **right arrow** button. In the right **Active Filters** window you can find filters you have chosen and which will be applied to the image if the adjacent box is checked. You can move filters from the right to the left window by using the **left arrow** button. When you click on a filter name you select it and its options are displayed under both windows, in the **Configure Selected Filter** area.

10.8.9.3. Color Deficient Vision

COLOR DEFICIENCY TYPE

In this drop-down list you can select among:

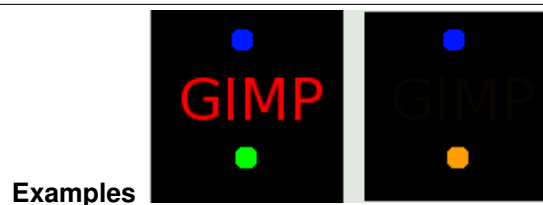
Protanopia Don't be afraid of this barbaric name. It is made of three Greek roots: "op" for eye, vision; "an" for negation; "proto" for first, the first color in the **RGB Color System**. So, protanopia is vision deficiency of Red color. It's the well-known daltonism.

Protanopia is actually more complex: red but green also are not seen. Protanope remains sensible to yellow and blue. Besides, there is a loss of luminance and a shift of hues to short wave lengths.

Deuteranopia Green vision is deficient. Deuteraopia is actually like protanopia, with a loss of green and red vision, but without luminance loss nor hue shift.

Tritanopia Blue but also yellow are deficient. There is actually a loss of Blue and Yellow vision; Red and Green are preserved, with luminance loss and a shift of hues to long waves.

Figure 10.45. Example of protanopia on a text. As you can note, a red-blind person will not see your red (255,0,0) text on a black (0,0,0) background. You will have to change color text. Daltonism is frequent in the population.



Examples

Figure 10.46. Examples of the three vision deficiencies on an image. From top to bottom: normal vision, protanopia, deuteranopia, tritanopia. It seems that filter doesn't give a fair reflection of medical data. In deuteranopia yellow is shifted to red. In tritanopia, green should be present: it is replaced by blue...

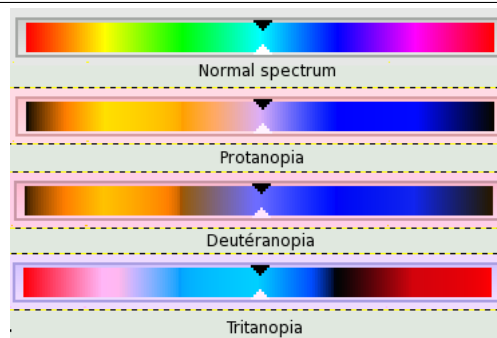
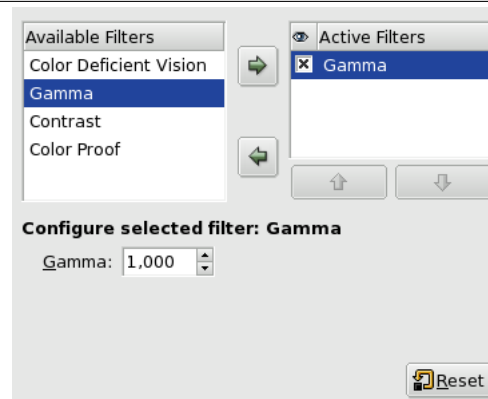


Figure 10.47. Gamma dialog

10.8.9.4. Gamma

Correspondance between electric intensity and color brightness is not exact and depends on device (camera, scanner, monitor...). “gamma” is a coefficient to correct this correspondance. Your image must remain visible in dark and bright areas, even if it is displayed on a too much or not enough luminous monitor. Display Filters “gamma” allows you to get an idea of your image aspect under these conditions.

10.8.9.5. Contrast

Here we are again in medical domain. “Contrast Sensibility” is visual system capacity to distinguish weak contrast differences. Some people, with cataract (their opaque crystalline lens scatters light over retina) or retina disease (due to diabetes for instance, which destroys cones and rods), have a contrast sensibility deficiency: for example, they have difficulties to distinguish spots on a dress.

With the “Contrast”, you see the image as if you were suffering from cataract. Perhaps you will have to increase your image contrast so that your grandmother can well see it. In most cases, only very low values of the **Contrast Cycles** parameter are useful. Higher values give an effect of no interest here: increasing luminosity value above 255 results in complementary color.

If you are interested in this question, browse the Web for “contrast sensibility”.

10.8.9.6. Color Proof

Systems reproducing colors cannot represent all colors of nature. Even if they have many common colors in their color range, some of them will be different. “gamut” is the color range of a system. *Color Profiles* allow to compensate these differences.

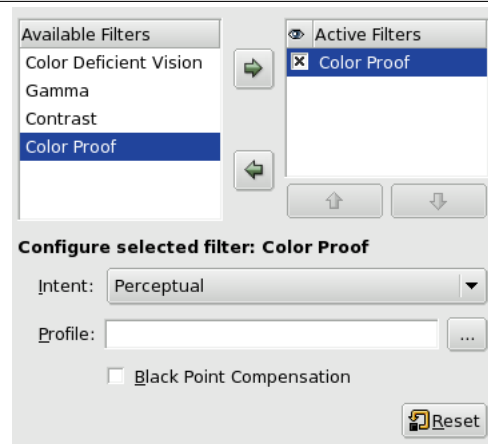
It may be useful, before printing an image, to see if applying a profile gives the wanted result. The “Color Proof” filter shows how your image will be after applying a profile.

INTENT

You can apply the filter you will select according four methods:

Perceptual The Perceptual method is the best to reproduce photographs on ink-jet printers. Adjustment is minimum and visual relationships between colors are preserved so that they are perceived in a natural way by the human eye.

Relative Colorimetric This method compares source white and black points to those of destination gamut and scales hues accordingly. It well suits printing photographs on ink-jet printers. It tends to darken result: compensate black point is often necessary.

Figure 10.48. Color Proof options

Saturation This intent preserves the saturation values of original pixels. It is used for documents where color punch is more important than their accuracy, as for logos. Continuously varying colors are badly represented, with color leaps.

Absolute Colorimetric This method leaves colors inside the destination gamut unchanged. Colors out of gamut are cut out. Color accuracy is preserved, but color relationships are not.

Profile This text box and its browser button allow you to select the profile you want on a storage device.

Black Point Compensation Black point Compensation scales hues from black point of the original image when result is too different from original.

10.8.10. Show Selection

This option toggles the visual dotted line that denotes a selection within the image window. The selection still exists even if this option is toggled. It is useful if you feel disturbed by this line at a moment.

Default is set in the [Image Window / Appearance](#).

10.8.10.1. Activate Dialog

- This command can be found at **View** → **Show Selection**.
- The **Ctrl-T** shortcut will activate the Show Selection command.

10.8.11. Show Layer Boundary

This option toggles the yellow visual dotted line that denotes a layer within the image window. It is merged with the image border when the layer has the same size as the image window and is actually visible only when the layer is smaller than this window.

Default is set in the [Image Window / Appearance](#).

10.8.11.1. Activate Dialog

- This command can be found at **View** → **Show Layer Boundary**.

10.8.12. Show Guides

This option toggles the visibility of **Guides** within the image window.

Default is set in the **Image Window / Appearance**.

10.8.12.1. Activate Dialog

- This command can be found at **View** → **Show Guides**.
- The **Shift–Ctrl–T** shortcut will activate the Show Guides command.

10.8.13. Snap to Guides

This option in a way magnetizes the guides you have set (see **Show Guides**). When you move a layer or a selection, they will get automatically onto the guides when they are near them. This allow to place them accurately.

10.8.13.1. Activate Dialog

- This command can be found at **View** → **Snap to Guides**.

10.8.14. Show Grid

This option toggles the visibility of a grid superimposed to the image. It allows to line up different selected elements of a layer.

Default is set in the **Image Window / Appearance**.

TIP



See also **Configure Grid** and **Snap to Grid**

10.8.14.1. Activate Dialog

- This command can be found at **View** → **Show Grid**.

10.8.15. Snap to Grid

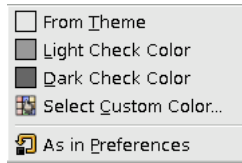
This option in a way magnetizes the grid you have set (see **Show Grid**). When you move a layer or a selection, they will get automatically onto the grid when they are near them. This allow to place them accurately.

10.8.15.1. Activate Dialog

- This command can be found at **View** → **Snap to Grid**.

10.8.16. Padding Color

You have there several possibilities to select canvas padding color. Canvas is the surface the image lays on: it looks like a frame around the image in the image window. That's only a matter of personal reason as this option doesn't interfere with the image itself. Don't mistake this color for the color used by the Fill tool.

Figure 10.49. Contents of the pop-up Padding Color window.**10.8.16.1. Activate Submenu**

- This option can be found in **View** → **Padding Color**

10.8.16.2. From Theme

That's theme defined in [Preferences/Theme](#)

10.8.16.3. Light/Dark Check Color

Ccheck representing transparency is defined in [Preferences/Display](#).

10.8.16.4. Select Custom Color

Opens the Color Selector window.

10.8.16.5. As in Preferences

This button allows you to return to your choice in [Image Window / Appearance](#).

10.8.17. Show Menubar

This option toggles the menubar. This may be useful when you are doing full screen work. With the menubar absent, right clicking on the image will open the way to menubar entries.

Default is set in the [Image Window / Appearance](#).

10.8.17.1. Activate Dialog

- This command can be found at **View** → **Show Menubar**.

10.8.18. Show Rulers

This option toggles the rulers. This may be useful when you are doing full screen work.

Default is set in the [Image Window / Appearance](#).

10.8.18.1. Activate Dialog

- This command can be found at **View** → **Show Rulers**.
- The **Shift–Ctrl–R** shortcut will activate the Show Rulers command.

10.8.19. Show Scrollbars

This option toggles the scrollbars. This may be useful when you are doing full screen work.

Default is set in the [Image Window / Appearance](#).

10.8.19.1. Activate Dialog

- This command can be found at **View** → **Show Scroll-bars**.

10.8.20. Show Statusbar

This option toggles the statusbar. This may be useful when you are doing full screen work.

Default is set in the [Image Window / Appearance](#).

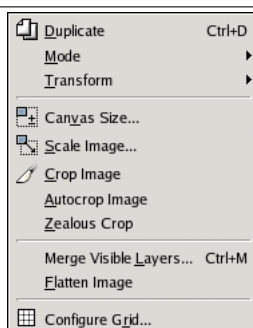
10.8.20.1. Activate Dialog

- This command can be found at **View** → **Show Statusbar**.

10.9. Image

10.9.1. Image

Figure 10.50. Contents of the Image menu



The Image menu contains commands that use or affect the entire image in some way, not just the active layer or some other specific part of the image.

Besides commands presented here, you can find commands added by some plug-ins to this menu.

10.9.2. Duplicate

Duplicate creates a new image which is an exact copy of the current one, with all its layers, channels, paths. The GIMP clipboard is unaffected.

10.9.2.1. Activate Dialog

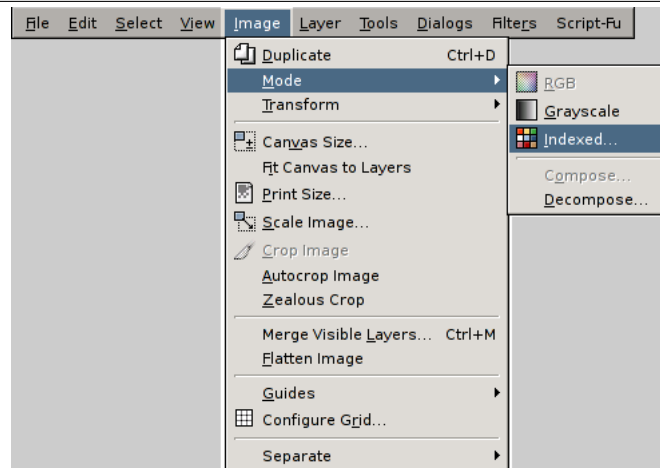
- This command can be found in each image menu at **Image** → **Duplicate**.
- The **Ctrl-D** key combination will call the Duplicate function.

10.9.3. Mode

It allows you to change the color mode of your image. Three modes are available.

10.9.3.1. Activate Submenu

- This command can be accessed via the image menu: **Image** → **Mode...**

Figure 10.51. The Mode submenu of the Image menu

10.9.3.2. Mode Menuitems

- The RGB mode
- The Grayscale mode
- The Indexed mode
- Decompose
- Compose

10.9.4. The RGB mode

You are normally working in RGB mode, well adapted to screen. See [Glossary](#) . You can change RGB to Grayscale or Indexed, but be careful: once the image saved you can no longer retrieve the RGB colors. Work on a copy. If your image beholds an Alpha channel, this will be rejected by the conversion process as these modes don't support Alpha Channel.

10.9.4.1. Activate Dialog

- This command can be accessed from an image menubar as **Image → Mode → RGB**.

10.9.5. The Grayscale mode

Converts your image to a 256 gray level image. See the glossary for more information about the [grayscale mode](#) .

10.9.5.1. Activate Dialog

- This command can be accessed from an image menubar as **Image → Mode → Grayscale**.

10.9.6. The Indexed mode

This command converts your image to indexed mode. See [Glossary](#) for explanations about the Indexed Color Mode.

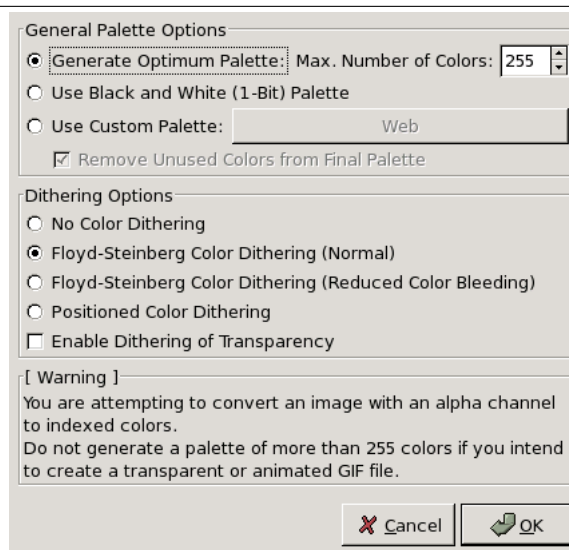
10.9.6.1. Activate Dialog

- This command can be accessed from an image menubar as **Image → Mode → Indexed**.

10.9.6.2. Options

This option opens the **Convert Image to Indexed Colors** dialog:

Figure 10.52. Options



General Palette Options

- **Generate Optimum Palette** : This option generates the best possible palette with a default maximum number of 256 colors (classical GIF format). You can reduce this *Maximum Number of Colors* . This may create unwanted effects on smooth transitions. You can reduce them by using a dithering option.
- **Use Black and White (1-bit) Palette** : This option generates line-art images.
- **Use Custom Palette** : The button allows you to select a custom palette in a list. The number of colors is indicated for each palette. The Web palette, 216 colors, is the Web-safe palette. It was originally created by Netscape to provide colors that would look the same on both Macs and PCs and Internet Explorer 3 could manage it. Since version 4, MSIE handles a 212 colors palette... This problem of color similarity between all platforms is not solved yet and probably will never be. You have to keep to two principles in your Web page: light text on dark background or dark text on light background and never entrust an information to a color.

Some colors of the palette may not be used if your image is poorly colored. They will be removed from the palette if the option *Remove Unused Colors from the Final Palette* is checked.

Dithering Options As an indexed image contains 256 colors or less, some colors in the original image may be absent in the palette. This may result in some blotchy or solid colors in subtle color areas. These options allows you to correct these unwanted effects induced by the Palette Options.

The filter will attempt to approximate the missing color by spreading pixels of the nearest palette colors going clustering. These clustered pixels seen from a distance simulate a new color. See the glossary for more information on **dithering** .

Three filters are available. It's not possible to foresee what the result of a specific filter will be and you will have to try all to get the best result. The *Positioned Color Dithering* is well adapted to animations.

Figure 10.53. Example full color no dithering. Here is the image of a smooth transition as an example.



Figure 10.54. Example 4 colors no dithering. After transformation to GIF 4 colors without dithering.



Figure 10.55. Example Floyd-Steinberg (normal). GIF 4 colors with Floyd-Sternberg (normal).



In a GIF image transparency is coded on 1 bit: transparent or not transparent. To give an illusion of partial transparency use the option **Enable Dithering of Transparency**, but the semi-flatten plugin will give you a better result.

10.9.7. Decompose

It is described with the **Decompose** filter.

10.9.7.1. Activate Dialog

- This command can be found in **Image** → **Decompose....**

10.9.8. Compose

It is described with the **Compose** filter.

10.9.8.1. Activate Dialog

- This command can be found in **Image** → **Compose....**

10.9.9. Transform

These menu items transform the image by flipping, rotation or cropping.

10.9.9.1. Activate Submenu

- This command can be accessed from an image menubar as **Image** → **Transform**.

10.9.9.2. Mode Menuitems

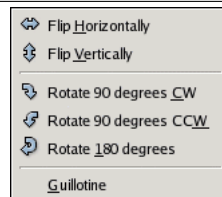
- **Flipping**
- **Rotation 90° CW; Rotation 90° CCW; Rotation 180°**
- **Guillotine**

10.9.10. Flip Horizontally / Vertically

You can flip, turn over, the image horizontally or vertically like a card. This command works on the whole image. To flip a selection, use the **Flip Tool**. To flip a layer use the functions of the Layers/Transform menu or the **Flip Tool**.

Figure 10.56. Example Floyd-Steinberg 4 colors. GIF 4 colors with Floyd-Sternberg-2.



Figure 10.57. The Transform submenu of the Image menu**10.9.10.1. Activate Dialog**

- You can find this command in the image menu under **Image** → **Transform** → **Flip Horizontally**.
- You can find this command in the image menu under **Image** → **Transform** → **Flip Vertically**.

10.9.11. Rotation

You can rotate the image 90° clockwise or counter-clockwise or by 180°. Can be used to change mode to Portrait or Landscape. You can rotate more progressively by using the Rotate Tool This command works on the whole image. To rotate a selection, use the **Rotate Tool**. To rotate a layer use the Layers/Transform functions or the **Rotate Tool**.

10.9.12. Guillotine

The Guillotine tool slices up the current image based on the images guides. A cut is made along every guide not unlike a guillotine might be used in an office to slice documents. As many new images as pieces will be created. For further guide information see the glossary entry for **Guides**

10.9.12.1. Activate Dialog

- You can find this command in the image menu under **Image** → **Transfor** → **Guillotine**.

10.9.13. Canvas Size

The canvas is the visible area of the image. By default the canvas coincides with layers. This function allows you to enlarge or to reduce the canvas size without modifying content of the layers the image contains. When you enlarge it you create free space around the image content. When you reduce it, the visible area is cropped, however the layers still extend beyond the canvas border.

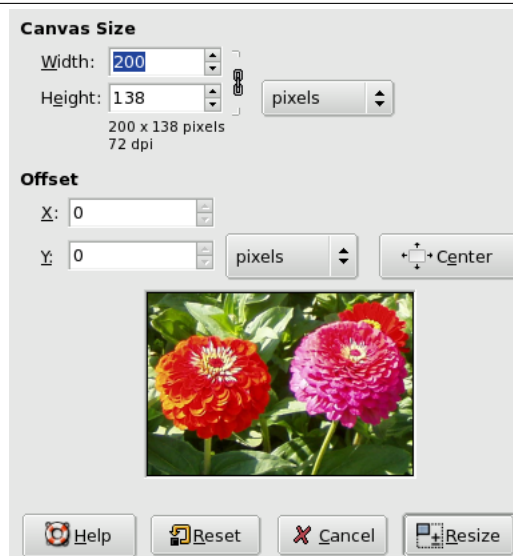
10.9.13.1. Activate Dialog

- You can find this command in the Toolbox menu: **Image** → **Canvas Size**

10.9.13.2. Options**CANVAS SIZE**

Width; Height You can set the *Width* and the *Height* you want give to the canvas. Default unit is pixel but you can choose another one, e.g. percents, if you want set new dimensions relatively to the current dimensions. If the adjacent Chain is intact both axis will develop jointly. If you break it by clicking on it, then you can set every axis separately.

Whatever unit you use, there is always information about the matching size in pixels and currently set resolution below the *Width* and *Height* fields. You cannot change the resolution in this dialog, if you want to do it, use the **Print Size dialog**.

Figure 10.58. Dialog canvas size**OFFSET**

Offset is used to place the image on canvas. The preview displays the image as a frame with a thin border and the canvas, when it is smaller than the image, as a frame with a thin black border.

X; Y X and Y parameters are the coordinates of the upper left corner of the image against the same corner of the canvas. They are negative when canvas is smaller than image. You can change them thanks to the text boxes. Default unit is pixel but you can choose another one. When the mouse pointer is in a box you can use the Up and Down arrow keys to change pixel value one by one. When Shift is pressed in change is ten by ten.

Center The **Center** button allows you to place the image center onto the canvas center.

NOTE

When you click on the **Resize**, the canvas is resized, but the pixel information in the image is not changed and the drawing scale is unchanged.

Because the added part of canvas doesn't contain layers (if layers hadn't been extending beyond the canvas border before the change), it is transparent with a checker look and is not immediately available for painting. You can either **flatten** the image, in which case you will get an image with a single layer fitting the canvas exactly, or you can use **Layer to Image Size** command resize the active layer only, without changing any other layers. You can also create a new layer and fill it with the background you want. You create so a digital passe-partout (a passe-partout is a kind of glass mount whose bottom can be opened so that you can slip a photo into it).

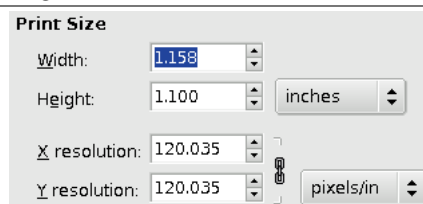
10.9.14. Print Size

This dialog is used for changing *dimensions of a printed image* and its *resolution*. It doesn't change the number of pixels in the image; it doesn't resample it (if you would like to change the size of an image

by resampling it, you should use the **Scale Image** function instead.

10.9.14.1. Print Size

Figure 10.59. The “Print Size” dialog



Output resolution determines the number of pixels that will be used in every inch of the printed image (or another length unit, depending on your preference). You must not mistake the output resolution with the printer resolution which is expressed in dpi (dots per inch): several dots are necessary to print a pixel.

You can set the required dimensions in the **Height** and **Width** fields or the required resolution in the **X/Y resolution** fields. You can use different units for both printing dimensions and resolution in the drop down lists. Vertical and horizontal dimensions (and resolutions) are kept in a constant proportion by default, you can unlink them by clicking on the Chain icon.

The resolution proposed by GIMP is the resolution of the original image. If you increase the output resolution the printed image will be smaller since more pixels are used for an inch. Conversely and for the same reason resizing modifies resolution.

Increasing resolution results in increasing the printed image sharpness. This is quite different from simply reducing the image size by scaling it since no pixels (no image informations) are removed.

10.9.15. Fit Canvas to Layers

This function adapts canvas size to the size of the biggest image layer (in both dimensions).

10.9.15.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Fit Canvas to Layers**, This function has no default shortcut.

10.9.16. Scale Image

The Scale Image function enlarges or reduces the image by changing the number of pixels it contains. It changes the size of the image content and resizes the canvas accordingly.

It acts on the whole image. If your image has layers with different sizes, it is possible that making the image smaller will shrink some of them completely away (a layer cannot be less than 1 pixel wide or high). If this happens you will be warned before the operation is applied.

If you want to scale a particular layer only, use the function **Scale Layer**.

NOTE



If scaling would produce an image larger than the “Maximum new image size” set in the **Environment** page of the Preferences dialog, you are warned and asked to confirm that you really want to do it. Saying yes will not necessarily have bad consequences, but you should give it a moment of thought, because very large images consume a lot of resources, and outrageously large images may consume more resources than you have, causing GIMP to crash or otherwise behave unpleasantly.

10.9.16.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Scale image**.

10.9.16.2. Scale Image Dialog

Figure 10.60. The “Scale Image” dialog

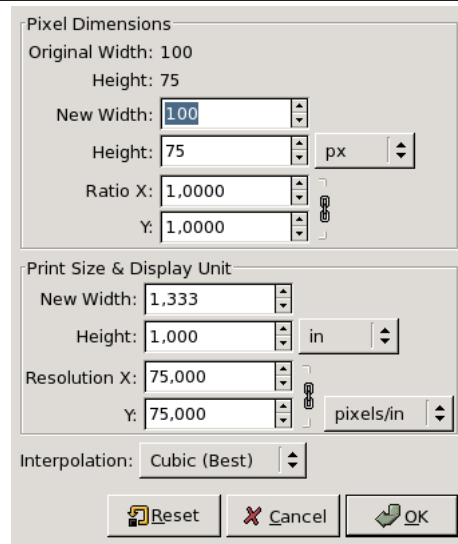


Image Size You must remember that an image can be located in four places: In the image file, in the RAM after loading, on your screen when displayed, on paper after printing. Scaling the image changes the number of pixels (information) the image contains, so it directly changes the amount of memory the image needs (in RAM or in a file).

However print size depends also on the resolution of the image (which basically says, how many pixels each inch on paper contains). If you want to change printing size without scaling the image and changing the number of pixels it consist of, you should use the **Print Size dialog**. Screen size also depends not only on pixel number, but also on the screen resolution, zoom factor and the **Dot for Dot** option.

Width; Height When you launch the Scale function GIMP displays the dimensions of the original image in pixels. You can set the **Width** and the **Height** you want to give to your image by adding or removing pixels. If the adjacent Chain icon is intact, width and height keep their proportion. If you break it by clicking on it, you can set them separately: this will result in deforming the image.

However you do not have to set dimensions in pixels, you can choose different units from the drop down menu. If you choose percent as units, you can set the image size relatively to its original size. You can also use physical units like inches or millimeters. However if you do that, you should keep attention to the **X/Y resolution** fields (and set them to an appropriate value), because image dimensions in pixels, which are being changed by this dialog, are computed from physical units using these resolution values.

If you are enlarging an image beyond its original size, missing pixels are calculated by interpolation but no new detail is added. The more enlarged the image is, the more blurred it becomes. The exact result of enlarging depends on the chosen interpolation method. You can improve the result by using the filter **Sharpen** (after scaling) but the best method is to use a high resolution when scanning, taking digital photographs or producing digital images by other means. Not scaling up well is an inherit nature of raster images.

Reducing your image may be necessary if you intend it to a Web page. You have to take in account that most Internet users have relatively small screens and that your big image can't be completely displayed on them. Many of screens work in 1024x768 or even smaller resolution. Adding or removing pixels is called "Resampling".

X Resolution; Y Resolution Here you can set the print resolution for the image.

Quality The **Interpolation** drop down list provides a selection of available methods of interpolating the color of pixels in a scaled image:

Interpolation Type

- **None** : no interpolation is used. Pixels are simply enlarged or removed as they are when zooming. This method is low quality, but very fast.
- **Linear** : this method is relatively fast, but still provides fairly good results.
- **Cubic** : The best, highest quality but also the slowest method available.

10.9.17. Crop Image

"Crop Image" crops the image to the selection bounds, by removing any strips at the edges whose contents are all completely unselected. Areas that are partially selected (for example, by feathering) are not cropped away. If no selection exists for the image, the menu entry will be insensitive.

NOTE



This command crops all image layers. To crop the active layer only, use **Crop Layer**.

10.9.17.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Crop Image**.

10.9.18. Autocrop Image

"Autocrop Image" removes borders from an image. It searches the active layer for the largest possible border area that all has the same color, and then crops this area from the image, just as though you had used the Crop tool.

CAUTION



Note carefully that this command only uses the *active layer* of the image to find borders. If other layers have color variations extending into the border zone of the active layer, they will be cropped away.

10.9.18.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Autocrop Image**.

10.9.19. Zealous Crop

Zealous Crop crops an image down using solid color as a guide. It crops edges as “Autocrop” does, but center areas too (well, in principle...).

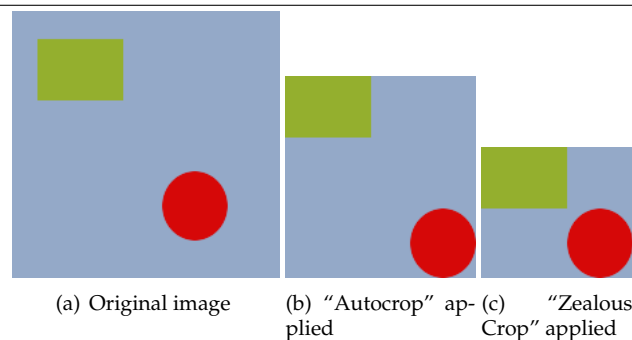
NOTE



Autocrop crops all layers, but analyses only the active layer: this may result in loss of information for other layers.

10.9.19.1. Example

Figure 10.61. Crop Examples



10.9.19.2. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Zealous Crop**.

10.9.20. Merge Visible Layers

“Merge Visible Layers” merges all layers of the image for which an “eye” symbol is shown in the Layers dialog into a single layer, leaving non-visible layers untouched. It is useful for merging a set of layers that may be scattered around the layer list. Selecting it brings up a dialog that asks you to choose between three options for the size of the final, merged layer: “Expanded as necessary” means that it will be made as small as possible without losing any of the contents of the merged layers; “Clipped to image” means it will be set to the size of the image and any layer contents outside the image bounds will be lost; and “Clipped to bottom layer” means what it says.

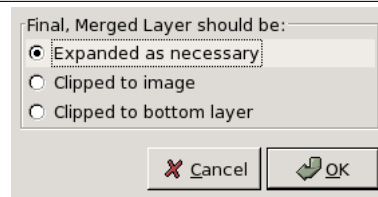
10.9.20.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Merge Visible Layers**.
- The **Ctrl-M** key combination will execute the Merge Visible Layers command.

10.9.20.2. Options

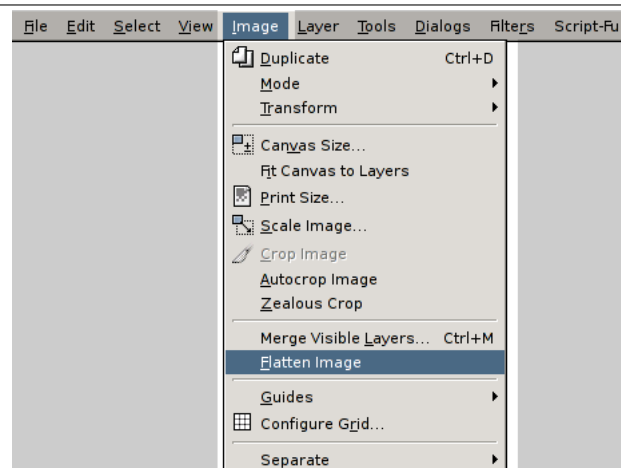
Three ways to merge visible layers Visible layers are layers marked with an eye in the Layers Dialog.

- *Expanded as necessary*: The final layer has the size of the largest layer of all of the visible layers. (Remember that a layer in GIMP can be larger than the image)

Figure 10.62. The “Merge Visible Layers” window

- *Clipped to image* : Will set the final layer size equal to the image size. (Remember that layers in GIMP can be larger than the image itself. If you have such a visible layer it will be clipped to the image size).
- *Clipped to bottom layer* : Will set the final layer size equal to the bottom layer. If the bottom layer is smaller than some of your visible layers, then the final layer will be clipped and trimmed according to both the size and position of the bottom layer.

10.9.21. Flatten Image

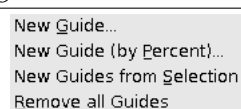
Figure 10.63. Accessing the **Flatten Image** menu item.

“Flatten Image” causes all of the layers of the image to be merged into a single layer with no alpha channel, with the same appearance as the full image viewed from the top. If there are any areas with transparency all the way through to the bottom of the layer stack, they are mixed with the image’s background color. This operation is performed as part of the process of exporting an image, if you save it in a format that does not support layers.

10.9.21.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Flatten Image**.

10.9.22. Guides

Figure 10.64. Guides options of the Image submenu

This command offers you some new practical improvements to manage guides.

10.9.22.1. Activate submenu

- You can accede to it via **Image** → **Guides**.

10.9.22.2. Guide Menuitems

In the **Guides** submenu, you can find the following commands:

- Remove all guides
- New Guide (Per percentage)
- New Guide
- New Guides (From Selection)

10.9.23. Remove all guides

This option removes all guides from image.

10.9.23.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Guides** → **Remove all guides**

10.9.24. New Guide (Per percentage)

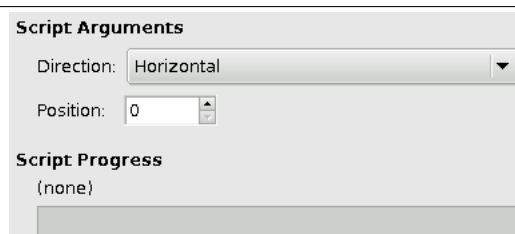
In these option, guide position is a percentage of the image Height/Width.

10.9.24.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Guides** → **New Guide (Per percentage)**

10.9.24.2. Options

Figure 10.65. Options



Direction; Position This option opens a dialog where, after selecting the *Direction* of the new guide, you can set its *Position* more precisely than by using click-and-drag. The coordinate origin is the image left upper corner.

10.9.25. New Guide

With this command you can place a guide on the image.

TIP



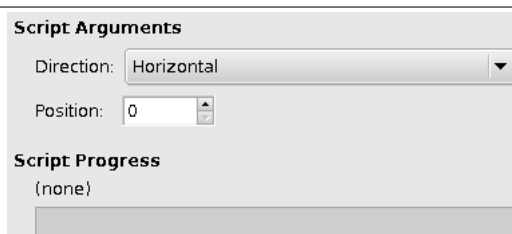
Clicking and dragging guides from the image rules to the wanted position is much more easy, but less accurate.

10.9.25.1. Activate Dialog

- This command can be accessed from an image menubar as **Image** → **Guides** → **New Guide**

10.9.25.2. Options

Figure 10.66. Options



Direction; Position This option opens a dialog where, after selecting the *Direction* of the new guide, you can set its *Position* more precisely than by using click-and-drag. The coordinate origin is the image left upper corner.

10.9.26. New Guides (From Selection)

This option places four guides for upper and lower, left and right limits of the current selection. Nothing happens if there is no selection.

10.9.26.1. Activate Dialog

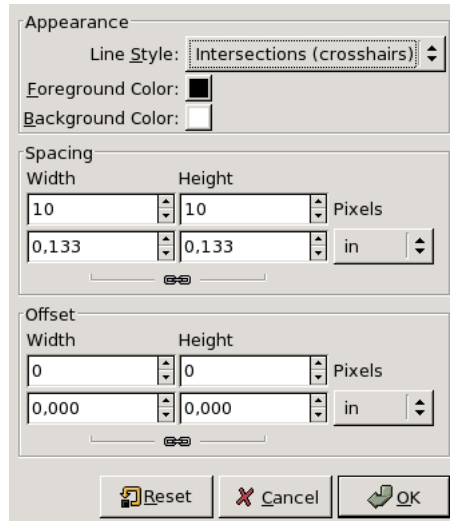
- This command can be accessed from an image menubar as **Image** → **Guides** → **New Guides (From Selection)**

10.9.27. Configure Grid

Only rectangular Cartesian grids are provided. You can choose the color of the grid lines, and the spacing and offsets from the image origin, independently for horizontal and vertical grid lines. You have a choice of five grid styles:

10.9.27.1. Activate Dialog

- You can find this command in the image menu under **Image** → **Configure Grid**.

Figure 10.67. Dialog configure grid

10.9.27.2. Options

APPEARANCE

Line style

Intersections (dots) This style, the least obtrusive, shows a simple dot at each intersection of grid lines.

Intersections (crosshairs) This style, the default, shows a plus-shaped crosshair at each intersection of grid lines.

Dashed This style shows dashed lines in the designated foreground color. It probably won't look good if the grid line spacing is small.

Double dashed This style shows dashed lines alternating the designated foreground and background colors.

Solid This style shows solid grid lines in the designated foreground color.

Fore- and Back-ground colors Click on on the color dwell to select a new color for the grid.

SPACING

Width and Height You can fix cell size of the grid and select the unit of measurement.

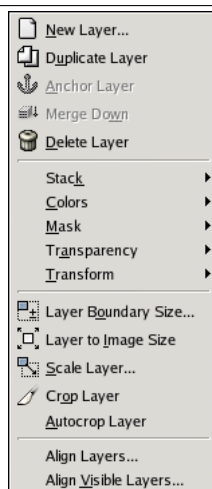
OFFSET

Width and Height You can fix the offset of the first cell. Coordinate origin is the upper left corner of the image. Coordinates start at (0,0).

10.10. Layers

10.10.1. Introduction to Layers

Figure 10.68. The Layers menu



In addition to the image menubar and image right-click menu, you can also get the Layers menu by right-clicking on a layer thumbnail in the Layers dialog. Several of the operations in this menu are also available from buttons in the Layers dialog: resizing a layer, managing layer transparency, and merging layers.

This menu can contain other entries that don't actually belong to GIMP: they have been brought by some plug-ins.

10.10.2. New Layer

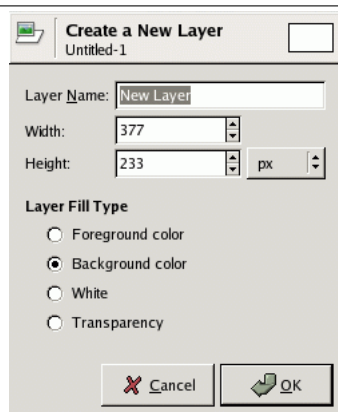
With this command, you can add a new empty layer, with the size you want, to the active image.

10.10.2.1. Activate Dialog

- This dialog comes up when you create a new layer within an image. It is activated by choosing **Layer** → **New**

10.10.2.2. New Layer dialog

Figure 10.69. New Layer dialog



Layer Name Here you assign the layer a name. This does not have any functional significance: it is simply a convenience to help you remember the role you intended the layer to play when you created it. By default, the name "New Layer" is used. If a layer with this name (or whatever name you choose) already exists, after you hit the "OK" button, a number will be appended to the name in order to make it unique, i. e., "New Layer#1".

Width and Height Here you set the dimensions of the new layer. When the dialog appears, the values are initialized to the dimensions of the image. You can change them, and if you want to use units other than pixels, you can get them using the Units menu to the right. You can't set the position of the layer within the image here, but you can always move it after it has been created.

Layer Fill Type Here you have four options for the solid color that will fill the layer: the active **Foreground color**, the active **Background color**, **White** and **Transparency**

10.10.3. Duplicate layer

This item adds to the image a new layer that is a perfect copy of the active layer in all respects but two: first, if the active layer is the bottom layer and lacks an alpha channel, one will be added to the copy; second, if any layer parasites are attached to the active layer, they are not copied (if you don't understand what this means, don't worry about it).

10.10.3.1. Activate Dialog

- You can find this command in the image menu under **Layer** → **Duplicate Layer**

10.10.4. Anchor layer

This item anchors the floating selection to the active layer. If the image does not contain a floating selection, this menu entry will be insensitive.

10.10.4.1. Activate Dialog

- You can find this command in the image menu under **Layer** → **Anchor layer**
- You can also use the **Ctrl-H** shortcut.

10.10.5. Merge down

This item causes the active layer to be merged with the layer below it in the layer list, taking into account the active layer's opacity and combination mode.

10.10.5.1. Activate Dialog

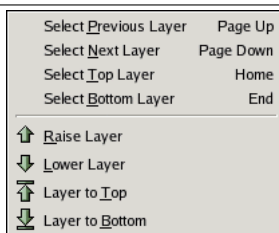
- You can accede to it via **Layer** → **Merge down**.

10.10.6. Delete layer

This item removes the active layer from the image.

10.10.6.1. Activate Dialog

- You can find this command in the image menu under **Layer** → **Delete Layer**

Figure 10.70. The Stack submenu

10.10.7. Stack

The Stack submenu contains operations that either select a new layer as the active layer (top four items), or change the position of the active layer in the layer list (as shown in the Layers dialog).

10.10.7.1. Activate submenu

- You can accede to it via **Layer** → **Stack**.

10.10.7.2. Stack Menuitems

- [Section 10.10.8](#)
- [Section 10.10.9 on the next page](#)
- [Section 10.10.10 on the following page](#)
- [Section 10.10.11 on page 321](#)
- [Section 10.10.12 on page 321](#)
- [Section 10.10.13 on page 321](#)
- [Section 10.10.14 on page 322](#)
- [Section 10.10.15 on page 322](#)

10.10.8. Select Previous Layer

"Select Previous Layer" causes the overlying layer in the layer list to become the active layer for the image, as highlighted in the Layers dialog. If the active layer is at the top of the list, this menu entry will be insensitive.

NOTE



Note that on a standard Windows-style English keyboard, the default shortcut **Page Up** refers not to the keys on the number pad, but to the other "Page Up" key in a group of six keys to the left of the number-pad.

TIP



The keyboard shortcuts for "Select Previous Layer" and "Select Next Layer" may be very useful if you find yourself often picking colors from one layer to use for painting on another layer, especially in conjunction with the feature that makes most paint tools switch to color-picking mode if the **Ctrl** key is held down.

10.10.8.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Layer** → **Stack** → **Select Previous Layer**,
- or by using the keyboard shortcut **Page.Up**
- or the Up arrow-key,
- or more simply by clicking on layer name in Layer Dialog.

10.10.9. Select Next Layer

"Select Next Layer" causes the next layer down in the layer list to become the active layer for the image, as highlighted in the Layers dialog. If the active layer is at the bottom of the list, this menu entry will be insensitive.

NOTE



Note that on a standard Windows-style English keyboard, the default shortcut **Page.Down** refers not to the keys on the number pad, but to the other "Page.Down" key in a group of six keys to the left of the number-pad.

10.10.9.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Layer** → **Stack** → **Select Next Layer**,
- or by using the keyboard shortcut **Page.Down**
- or the Down arrow-key,
- or more simply by clicking on layer name in Layer Dialog.

10.10.10. Select Top Layer

"Select Top Layer" causes the top layer in the layer list to become the active layer for the image, as highlighted in the Layers dialog. If the active layer is at the top of the list, this menu entry will be insensitive.

NOTE



Note that on a standard Windows-style English keyboard, the default shortcut **Home** refers not to the keys on the number pad, but to the other "Home" key in a group of six keys to the left of the numberpad.

10.10.10.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Stack** → **Select Top Layer**,
- or by using the keyboard shortcut **Home**
- or more simply by clicking on layer name in Layer Dialog.

10.10.11. Select Bottom Layer

“Select Bottom Layer” causes the bottom layer in the layer list to become the active layer for the image, as highlighted in the Layers dialog. If the active layer is at the bottom of the list, this menu entry will be insensitive.

NOTE



Note that on a standard Windows-style English keyboard, the default shortcut **End** refers not to the keys on the number pad, but to the other “End” key in a group of six keys to the left of the numberpad.

10.10.11.1. Activate Dialog

- This command can be accessed from an image menubar as **Layers** → **Stack** → **Select Bottom Layer**,
- or by using the keyboard shortcut **End**
- or more simply by clicking on layer name in Layer Dialog.

10.10.12. Raise Layer

“Raise layer” raises the active layer one level higher in the layer list. If it is already at the top, or there is only one layer, the menu entry will be insensitive. If the active layer is at the bottom and lacks an alpha channel, it cannot be raised until an alpha channel is added to it.

10.10.12.1. Activate Dialog

- This command can be accessed from the image menu-bar via **Layer** → **Stack** → **Raise Layer**
- or by using the keyboard shortcut **Shift+Page Up**

NOTE



Shortcut can vary according to system.

10.10.13. Lower layer

This item lowers the active layer one level in the layer list. If it is already at the bottom, or there is only one layer, the menu entry will be insensitive.

10.10.13.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Stack** → **Lower Layer**
- or by using the keyboard **Down** key.

10.10.14. Raise Layer to top

This item raises the active layer to the top of the layer list. If it is already at the top, or there is only one layer, the menu entry will be insensitive. If the active layer is at the bottom and lacks an alpha channel, it cannot be raised until an alpha channel is added to it.

10.10.14.1. Activate Dialog

- This command can be accessed from the image menu-bar under **Layer** → **Stack** → **Raise to Top**
- or by using the keyboard shortcut **Shift+Home**.

NOTE



Shortcut can vary according to systems.

10.10.15. Layer to bottom

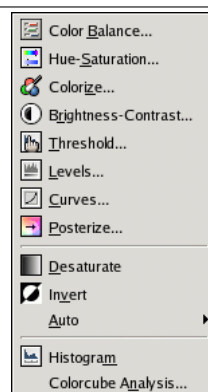
This item lowers the active layer to the bottom of the layer list. If it is already at the bottom, or there is only one layer, the menu entry will be insensitive.

10.10.15.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Stack** → **Layer to Bottom**

10.10.16. The “Colors” sub-menu

Figure 10.71. The “Color” sub-menu



The Color submenu of the Layers menu contains operations that alter colors within the image. The top entries give access to the **Color tools**, which are described in the Toolbox chapter.

10.10.16.1. Activate submenu

- You can accede to it via **Layer** → **Colors**.

10.10.16.2. Color Menuitems

In the “Colors” sub-menu you will find:

- [Section 10.10.17](#)
- [Section 10.10.18](#)
- [Section 10.10.19](#)

10.10.17. Desaturate

“Desaturate” causes all colors in the active layer to be converted to correspondingly bright shades of gray. It differs from converting the image to grayscale in two respects: first, it only operates on the active layer; second, the colors in the layer continue to be three-component RGB colors, and nothing prevents you from painting the desaturated layer with any colors you please.

NOTE



Desaturate works only on layers from RGB images; if the image is Grayscale or Indexed, the menu entry will be insensitive.

10.10.17.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Color** → **Desaturate**.

10.10.18. Invert

“Invert” causes all colors in the active layer to be inverted in brightness, as though the image were converted into a negative. Dark areas turn to bright and conversely; hues are replaced by their complement (for more informations about colors see glossary at [Color Model](#)).

NOTE



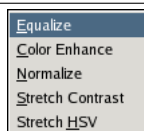
Invert works on layers from RGB and Grayscale images, but if the image is Indexed, the menu entry will be insensitive.

10.10.18.1. Activate Dialog

- This command can be accessed from an image menubar as **Layers** → **Color** → **Invert**.

10.10.19. Submenu: Auto

Figure 10.72. The Colors/Auto submenu



The Layers/Colors/Auto submenu contains operations that automatically adjust the distribution of colors in the active layer, without requiring input from the user. Several of them are actually implemented as plugins.

10.10.19.1. Activate submenu

- You can accede to it via **Layer** → **Colors** → **Auto**.

10.10.19.2. Color Menuitems

In the Color/Auto sub-menu you can find:

- [Section 10.10.20](#)
- [Section 10.10.21](#)
- [Section 10.10.22](#)
- [Section 10.10.23 on the facing page](#)
- [Section 10.10.24 on the next page](#)

10.10.20. Equalize

“Equalize” adjusts the brightness of colors across the active layer so that the histogram for the Value channel is as nearly as possible flat, that is, so that each possible brightness value appears at about the same number of pixels as each other value. Sometimes Equalize works wonderfully at enhancing the contrasts in an image. Other times it gives garbage. It is a very powerful operation, which can either work miracles on an image or destroy it.

10.10.20.1. Activate Dialog

- This command can be accessed from an image menubar as **Layers** → **Color** → **Auto** → **Equalize**.
- or by using the keyboard shortcut **Shift-Page_Down**.

10.10.21. Stretch Contrast

This command is somewhat similar to **Normalize** plug-in in its effects, except that it works on each color channel of the layer individually, rather than just the brightness values. This usually leads to color shifts within the image, so it may not produce the result you are looking for. Stretch Contrast operates on layers from RGB, Grayscale, and Indexed images.

10.10.21.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Color** → **Auto** → **Stretch Contrast**.

10.10.22. Color Enhance

“Color Enhance” increases the saturation range of colors in the layer without altering brightness or hue. It does this by converting the colors in HSV space, measuring the range of saturation values across the image, then stretching this range to be as large as possible, and finally converting the colors back to RGB. It works on layers from RGB and Indexed images. If the image is Grayscale, the menu entry will be insensitive.

10.10.22.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Color** → **Auto** → **Color Enhance**.

10.10.23. Stretch HSV

This command does the same thing as **Stretch Contrast**, except that it works in HSV color space rather than RGB color space. Thus, it independently stretches the hue channel, the saturation channel, and the value channel. Occasionally the results are good, often they are a bit odd. Stretch HSV operates on layers from RGB and Indexed images. If the image is Grayscale, the menu entry will be insensitive.

10.10.23.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Colors** → **Auto** → **Stretch HSV**.

10.10.24. Normalize

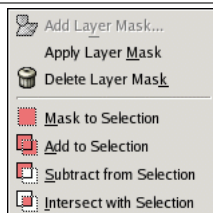
This command scales brightness values across the active layer so that the darkest point becomes black, and the brightest point becomes as bright as possible without altering its hue. This is often a “magic fix” for images that are dim or washed out. Normalize works on layers from RGB, Grayscale, and Indexed images.

10.10.24.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Color** → **Auto** → **Normalize**.

10.10.25. Mask

Figure 10.73. The Mask submenu of the Layers menu



The Mask submenu of the Layers menu contains operations that involve a layer mask: creating one, applying one, deleting one, or converting one into a selection. See the **Layer Masks** section for more information on layer masks and how to use them.

10.10.25.1. Activate submenu

- You can accede to it via **Layer** → **Mask**.

10.10.25.2. Mask Menuitems

- [Section 10.10.26 on the following page](#)
- [Section 10.10.27 on page 327](#)
- [Section 10.10.28 on page 327](#)
- [Section 10.10.32 on page 328](#)

- [Section 10.10.33 on page 328](#)
- [Section 10.10.34 on page 329](#)
- [Section 10.10.35 on page 329](#)

10.10.26. Add Layer Mask

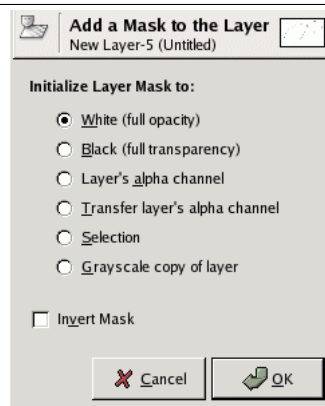
“Add Layer Mask” adds a mask to the layer, bringing up a dialog in which you can set the initial properties of the mask. If the layer already has a layer mask, or cannot have one because it lacks an alpha channel, the menu entry is insensitive. See the [Layer Mask](#) section for more information.

10.10.26.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Mask** → **Add Layer Mask**
- or from the pop-menu you get by right clicking on the active layer in the Layer Dialog.

10.10.26.2. Add Layer Mask dialog

Figure 10.74. The “Add Layer Mask” dialog



Initialize Layer Mask to The popup dialog allows you six choices for the initial contents of the layer mask:

White (full opacity) This option will produce full opacity when the layer mask; that is, it will be as if there were no layer mask.

Black (full transparency) This option will produce complete transparency, so that you will need to paint on the layer mask in order to make any part of the layer visible.

Layer's alpha channel This option will cause the layer mask to produce the same transparency that is produced by the layer's alpha channel. Note that the alpha channel itself will not be altered, so for partially transparent areas, the transparency will be “squared”, as it were.

Transfer layer's alpha channel This option does the same thing as the previous option, except that it also resets the layer's alpha channel to full opacity. The effect, then, is to transfer the transparency information from the alpha channel to the layer mask, leaving the layer with the same appearance as before.

Selection This option converts the selection into a layer mask, so that selected areas are opaque, and unselected areas are transparent. If any areas are partially selected, toggling the **Quick-Mask button** will help you predict what the effects are going to be.

Grayscale copy of layer This option converts the layer itself into a layer mask. It is mainly useful when you plan to add new contents to the layer afterwards.

Invert Mask If you check "Invert Mask" at the bottom of the dialog, then the resulting mask is inverted, so that transparent becomes opaque and vice versa.

When you click on "OK" the mask symbol appears at the right of the layer thumbnail in the Layer Dialog.

10.10.27. Apply Layer Mask

"Apply Layer Mask" causes the layer mask to be merged with the active layer, with the transparency set by the mask applied to the layer's alpha channel. The layer mask is removed. If the active layer does not have a layer mask, the menu entry is insensitive. See the **Layer Masks** section for more information.

10.10.27.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer → Mask → Apply Layer Mask**.
- or from the pop-menu you get by right clicking on the active layer in the Layer Dialog.

10.10.28. Delete Layer Mask

"Delete Layer Mask" deletes the active layer's layer mask. If the active layer does not have one, the menu entry is insensitive.

10.10.28.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer → Mask → Delete Layer Mask**
- or from the pop-menu you get by right clicking on the active layer in the Layer Dialog.

10.10.29. Edit Layer Mask

When this option is checked, the layer mask component of the active layer is active, with a white border. When this option is unchecked, the image component is active. Clicking on the thumbnail of the component you want to activate is more simple.

10.10.29.1. Activate Option

- This option can be accessed from an image menu-bar via **Layer → Mask → Edit Layer Mask**,

10.10.30. Disable Layer Mask

As soon as you create a layer mask, it acts on the image. This option allows you to abort this action. The thumbnail border of the layer mask in Layer Dialog turns to red.

10.10.30.1. Activate Dialog

- You can access to this function by checking **Layer** → **Mask** → **Disable Layer Mask**, or by holding **Alt** key down (**Ctrl–Alt** on some systems) and clicking once on the layer mask thumbnail in Layer Dialog.

You can undo this action by unchecking the option in the Layer/Masque menu or by (Ctrl)Alt-clicking again on the layer mask thumbnail.

10.10.31. Show Layer Mask

While working on the layer, you may need to examine the layer mask not interfering with the image layer. This command allows you to display the layer mask instead of the image layer which is not visible. Layer mask thumbnail in Layer Dialog takes a green border.

10.10.31.1. Activate Dialog

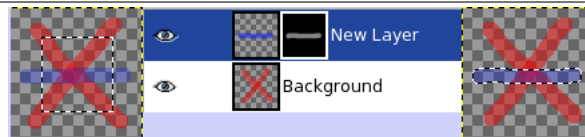
- This command can be accessed from an image menu-bar via **Layer** → **Mask** → **Show Layer Mask**, or by holding **Alt** key down (**Ctrl–Alt** on some systems) and clicking once on the layer mask thumbnail in Layer Dialog.

You can undo this action by unchecking the option in the Layer/Masque menu or by (Ctrl)Alt-clicking again on the layer mask thumbnail.

10.10.32. Mask to Selection

This command replaces the selection by the selection of image pixels corresponding to pixels with opacity more than 0% in the layer mask. White pixels (100% opaque) in layer mask will give pixels fully selected in the image. Grayscaled pixels (1%-99% opaque) will give a feathered selection. Black pixels (0% opaque) will not be selected. The layer mask is not modified by this command.

Figure 10.75. Illustration of Add layer mask to Selection. From left to right: original image with a selection, layer dialog with a layer mask created with the “Layer’s alpha channel” option, after “Mask to selection”.



10.10.32.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Mask** → **Mask to Selection**,
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.33. Add Layer Mask to Selection

This commands adds to the existing selection the pixels of the active layer corresponding to pixels with more than 0% opacity in the layer mask. White pixels (100% opaques) in layer mask will give pixels fully selected in the image. Grayscaled pixels (1%-99% opaques) will give a feathered selection. Black pixels (0% opaques) will not be selected. Pixels are not actually added: they are included in the selection. The layer mask is not modified by this command.

Figure 10.76. Illustration of Add layer mask to Selection. From left to right: original image with a selection, layer dialog with a layer mask created with the “Layer’s alpha channel” option, after adding layer mask to selection.



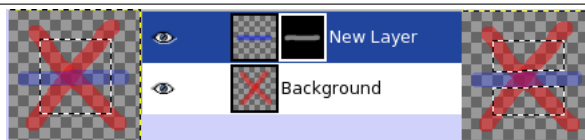
10.10.33.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Mask** → **Add to Selection**,
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.34. Subtract Mask Layer from Selection

This command subtracts from the selection image pixels corresponding to pixels with opacity more than 0% in the layer mask. White pixels (100% opaque) in layer mask will give pixels fully subtracted from the selection. Grayscaled pixels (1% to 99% opaque) will give a feathered selection. Black pixels (0% opaque) will not be subtracted. Subtracted pixels are not removed: they are not included in the selection. The layer mask is not modified by this command.

Figure 10.77. Illustration of Subtract layer mask from Selection. From left to right: original image with a selection, layer dialog with a layer mask created with the “Layer’s alpha channel” option, after “Subtract Layer Mask from selection”.



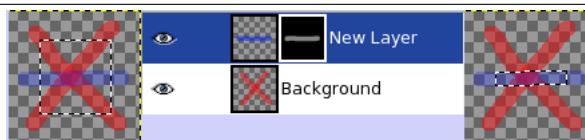
10.10.34.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Mask** → **Subtract from Selection**,
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.35. Intersect Layer Mask with Selection

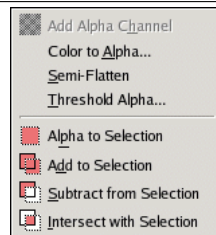
This command retains for the selection only the pixels of the original selection corresponding to pixels with more than 0% opacity in the layer mask. White pixels (100% opaque) in layer mask will give pixels fully selected in the image. Grayscaled pixels (1%-99% opaque) will give a feathered selection. Black pixels (0% opaque) will not be selected. The layer mask is not modified by this command.

Figure 10.78. Illustration of layer mask intersecting with Selection. From left to right: original image with a selection, layer dialog with a layer mask created with the “Layer’s alpha channel” option, after intersecting layer mask with selection.



10.10.35.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Mask** → **Intersection with Selection**,
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.36. The “Transparency” sub-menu of the “Layer” menu**Figure 10.79.** The Transparency submenu of the Layer menu

The Transparency submenu of the Layers menu contains operations that use or affect the alpha channel of the active layer.

10.10.36.1. Activate submenu

- You can accede to it via **Layer** → **Transparency**.

10.10.36.2. Transparency Menuitems

- [Section 10.10.37](#)
- [Section 10.10.40 on the facing page](#)
- [Section 10.10.38](#)
- [Section 10.10.39 on the facing page](#)
- [Section 10.10.41 on the next page](#)
- [Section 10.10.42 on page 332](#)
- [Section 10.10.43 on page 332](#)
- [Section 10.10.44 on page 332](#)

10.10.37. Add Alpha Channel

“Add Alpha Channel” adds an alpha channel to the active layer. Without an alpha channel, a layer cannot have transparency or a layer mask. If the active layer already has an alpha channel (and unless it is the bottom layer of the image, it must), then the menu entry will be insensitive.

10.10.37.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Transparency** → **Add alpha Channel**.

10.10.38. Color to Alpha

With this command, you can make colors transparent. It is described in the [Section 11.3.13 on page 366](#) filter.

10.10.38.1. Activate Dialog

- This menu entry, accessed from an image menubar as **Layer** → **Transparency** → **Color to Alpha**.

10.10.39. Semi-flatten

This command is described in the [Semi-flatten](#) filter.

Tento příkaz je popsán v části věnované filtru [Částečně zploštit](#).

10.10.39.1. Activate Dialog

- This menu entry, accessed from an image menubar as **Layer** → **Transparency** → **Semi-flatten**.

10.10.40. Threshold Alpha

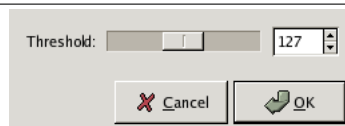
This command converts partial transparency into all-or-none transparency, by applying a user-specified cutoff threshold to the layer's alpha channel. It only works on alpha-channel-possessing layers from RGB images: if the image is Grayscale or Indexed, or the layer lacks an alpha channel, the menu entry will be insensitive. If **Keep transparency** has been toggled on in the Layers dialog, the command will show an error message and refuse to operate.

10.10.40.1. Activate Dialog

- This operation can be accessed from an image menubar as **Layer** → **Transparency** → **Threshold Alpha**.

10.10.40.2. Dialog window description

Figure 10.80. The “Threshold Alpha” dialog



Threshold With this option you can set the transparency value which will be used as a threshold. You can do that by using the slider or by entering value in the input box (0-255). All transparency values below this threshold will turn opaque. All transparency values above this threshold will turn to full transparency.

10.10.41. Alpha to Selection

“Alpha to Selection” transforms the active layer's alpha channel (which encodes transparency) into the image's selection. Opaque areas become fully selected, transparent areas unselected, and translucent areas partially selected. The other operations in this group do similar things, except that instead of completely replacing the existing selection with the selection produced from the alpha channel, they either add the two selections, subtract the alpha-selection from the existing selection, or create a selection that is the intersection of the two.

10.10.41.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transparency** → **Alpha to Selection**
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.42. Add to Selection

This command selects the pixels of the active layer according to their opacity: 100% opaque pixels of the active layer will be totally selected; translucent pixels of the active layer will be partially selected; 0% opaque pixels will not be selected. This selection will be *added* to an existing selection.

10.10.42.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transparency** → **Add to Selection**
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.43. Subtract from Selection

This command selects the pixels of the active layer according to their opacity: 100% opaque pixels of the active layer will be totally selected; translucent pixels of the active layer will be partially selected; 0% opaque pixels will not be selected. This selection will be *subtracted* from the corresponding part of the existing selection.

10.10.43.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transparency** → **Subtract from Selection**
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.44. Intersect with Selection

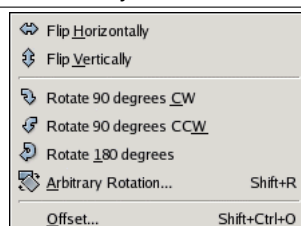
This command selects the pixels of the active layer according to their opacity: 100% opaque pixels of the active layer will be totally selected; translucent pixels of the active layer will be partially selected; 0% opaque pixels will not be selected. This selection will be *intersected* with an existing selection: only common parts of both selections will be kept.

10.10.44.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transparency** → **Intersection with Selection**
- or from the pop-menu you get by right clicking on the active layer in Layer Dialog.

10.10.45. Transform

Figure 10.81. The Transform submenu of the Layer menu



The Transform submenu of the Layers menu contains operations that flip or rotate the active layer of the image.

10.10.45.1. Activate submenu

- You can accede to it via **Layer** → **Transformation**.

10.10.45.2. Transformation Menuitems

- [Section 10.10.37 on page 330](#)
- [Section 10.10.46](#)
- [Section 10.10.47](#)
- [Section 10.10.48](#)
- [Section 10.10.49 on the following page](#)
- [Section 10.10.50 on the next page](#)
- [Section 10.10.51 on the following page](#)
- [Section 10.10.52 on the next page](#)

10.10.46. Flip Horizontally

“Flip Horizontally” reverses the layer left-to-right. Both commands leave the layer dimensions unchanged; neither causes any degradation of pixel data in the layer.

10.10.46.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transform** → **Flip Horizontally**

10.10.47. Flip Vertically

“Flip Vertically” reverses the active layer top-to-bottom. This command leaves layer dimensions unchanged; neither causes any degradation of pixel data in the layer.

10.10.47.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transform** → **Flip Vertically**

10.10.48. Rotate 90 degrees CW

This command rotates the active layer by 90° clock-wise, with no degradation of pixel data. The shape of the layer is not altered: note that this may cause it to extend beyond the bounds of the image. (In GIMP this is permitted, and does not force the layer to be cropped. You will not, however, be able to see the parts that extend outside the image unless you resize the image canvas or move the layer.) The center of the layer will be located at the same place after rotation as it was before rotation.

10.10.48.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transform** → **Rotate 90 degrees CW**

10.10.49. Rotate 90 degrees CCW

This command rotates the active layer by 90° counter-clockwise, with no degradation of pixel data. The shape of the layer is not altered: note that this may cause it to extend beyond the bounds of the image. (In GIMP this is permitted, and does not force the layer to be cropped. You will not, however, be able to see the parts that extend outside the image unless you resize the image canvas or move the layer.) The center of the layer will be located at the same place after rotation as it was before rotation.

10.10.49.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transform** → **Rotate 90 degrees CCW**

10.10.50. Rotate 180 degrees

This command rotates the active layer by 180°, with no degradation of pixel data. The shape of the layer is not altered: note that this may cause it to extend beyond the bounds of the image. (In GIMP this is permitted, and does not force the layer to be cropped. You will not, however, be able to see the parts that extend outside the image unless you resize the image canvas or move the layer.) The center of the layer will be located at the same place after rotation as it was before rotation.

10.10.50.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Transform** → **Rotate 180 degrees**

10.10.51. Arbitrary Rotation

This command is an alternative way of activating the **Rotate tool**.

10.10.51.1. Activate Dialog

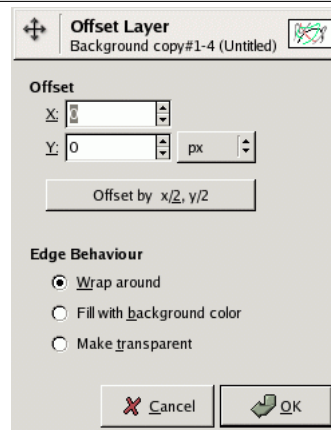
- This command, accessed from an image menubar as **Layer** → **Transform** → **Arbitrary Rotation**
- or by using the **Shift-R** key combination.

10.10.52. Offset

"Offset" allows you to shift the *content* of the active layer. Anything that gets shifted outside the edges of the layer is cropped away. Choosing this menu entry brings up a dialog that allows you to specify how the shift should be performed. You can set the distance to shift the layer in the X and Y directions, measuring from the upper left corner, with positive numbers representing movement to the right (X) or downward (Y). The default units are pixels, but you can use the Units menu in the Offset area to change this if you like: units of "%" are sometimes useful. Pressing the button labeled "Offset by x/2, y/2" will cause the layer contents to be shifted exactly half the width and height of the layer.

10.10.52.1. Activate Dialog

- This command can be accessed from an image menu-bar as **Layer** → **Transform** → **Offset**.
- or by using the **Shift-Ctrl-O** shortcut.

Figure 10.82. The "Offset" dialog**10.10.52.2. The "Offset" dialog****Offset**

X;Y With these both options, you can set how long the content of the active layer offset will be in the respective directions. You have two input boxes with arrow heads to enter offset in pixels. You can select another unit of measurement in the next drop-down list.

Offset by (x/2),(y/2) Ought to this button, you can set X and Y offset by half the width and height of the image automatically.

Edge Behavior There are three possible ways to treat the areas left empty by the shift, specified by "Edge Behavior":

- *Wrap around*: This option causes the empty space to be filled with the parts of the layer that are shifted outside the edges.
- *Fill with background color*: This option causes the empty space to be filled with the Background color shown in the Color Area of the Toolbox.
- *Make transparent*: This option causes the empty area to be made transparent. If the layer lacks an alpha channel, "Make transparent" will not be available.

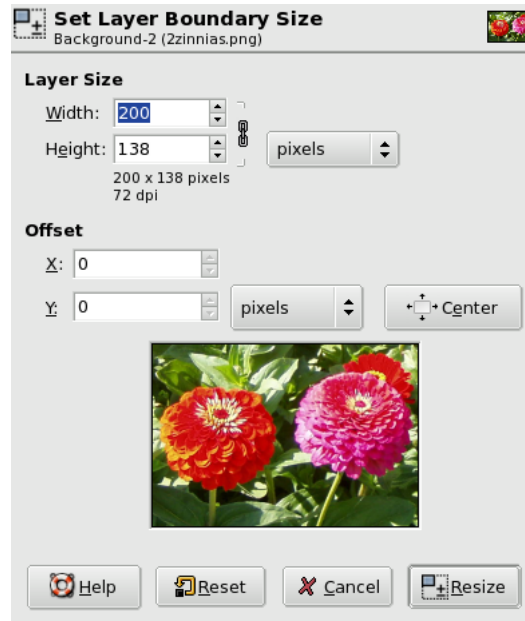
10.10.53. Layer Boundary Size

A layer has not always the same size as the image. It can be smaller or larger, in which case some parts are hidden. Selecting this item will activate a dialog in which you can set parameters for the active layer dimensions. This command changes layer dimensions, but does not scale its content.

10.10.53.1. Activate Dialog

- This command can be accessed from the image menu-bar via **Layer** → **Layer Boundary Size**

10.10.53.2. Resize Layer dialog**Layer Size**

Figure 10.83. The “Layer Boundary Size” Dialog

Width; Height When you call this dialog, active layer original dimensions are displayed. You can change them. For this, you have two input boxes which are linked if the associated Chain symbol is not broken: then Width/Height ratio is kept; else, both dimensions are independent.

Default unit of measurement is pixel. You can change it by using the drop-down list: for instance, you can use a percentage W/H ratio.

X Offset; Y Offset By default, the resized layer is placed in the upper left corner of the image. Here you can set the offset of the upper left corner of the layer from the image left corner, in both dimensions. Default unit of measurement is pixel; you can change it by using the drop-down list. You can also place the layer at the center of the image by using the **Center** button.

10.10.54. Layer to Image Size

This item re-sizes the layer boundaries to match the image bounds, without moving the contents of the layer with respect to the image.

10.10.54.1. Activate Dialog

- This command can be accessed from the image menubar via **Layer** → **Stack** → **Layer to Image Size**

10.10.55. Scale Layer

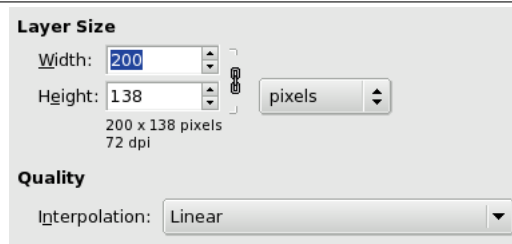
With this item you can resize the layer and its contents. A dialog appears in which you can set parameters for the layer size and image quality.

10.10.55.1. Activate Dialog

- These commands can be accessed from an image menubar as **Layer** → **Scale Layer**

10.10.55.2. Scale Layer dialog

Figure 10.84. Scale Layer dialog



Layer Size When you scale a layer, GIMP must add new pixels. It does that trying hard to perturb image as less as possible. This process is called *interpolation*. It is evident that new details will not appear. Layer can turn somewhat blurred.

Width; Height When you launch the Scale function GIMP displays the dimensions of the original layer in pixels. You can set the **Width** and the **Height** you want to give to your layer by adding or removing pixels. If the adjacent Chain icon is intact, width and height keep their proportion. If you break it by clicking on it, you can set them separately: this will result in deforming the layer.

However you do not have to set dimensions in pixels, you can choose different units from the drop down menu. If you choose percent as units, you can set the layer size relatively to its original size. You can also use physical units like inches or millimeters. However if you do that, you should keep attention to the **X/Y resolution** of the image.

If you are enlarging a layer, missing pixels are calculated by interpolation but no new detail is added. The more enlarged the layer is, the more blurred it becomes. The exact result of enlarging depends on the chosen interpolation method. You can improve the result by using the filter **Sharpen** (after scaling) but the best method is to use a high resolution when scanning, taking digital photographs or producing digital images by other means. Not scaling up well is an inherit nature of raster images.

Quality The **Interpolation** drop down list provides a selection of available methods of interpolating the color of pixels in a scaled layer:

Interpolation Type

- **None:** no interpolation is used. Pixels are simply enlarged or removed as they are when zooming. This method is low quality, but very fast.
- **Linear:** this method is relatively fast, but still provides fairly good results.
- **Cubic:** The best, highest quality but also the slowest method available.

10.10.56. Crop Layer

“Crop Layer” crops the active layer, only, to the selection bounds, by removing any strips at the edges whose contents are all completely unselected. Areas that are partially selected (for example, by feathering) are not cropped away. If no selection exists for the layer, the menu entry will be insensitive.

10.10.56.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Crop layer**.

10.10.57. Autocrop Layer

“Autocrop Layer” removes borders from the active layer. It searches the active layer for the largest possible border area that all has the same color, and then crops this area from the layer.

10.10.57.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Autocrop Layer**.

10.10.58. Align Visible Layers

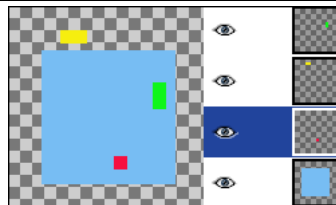
“Align Visible Layers” allows you to position visible layers (with the eye icon turned on) very precisely. This precision is not useful on usual image editing; it is much more useful when working on animations, with many small layers. By clicking on this command, you open a dialog containing many alignments settings.

NOTE



In Gimp-1.2, the default alignment base was the upper visible layer in the stack. In Gimp-2, this default alignment base is now the canvas edge. You can still align on the bottom layer of the stack, even if it is invisible, by checking the “Use the (invisible)bottom layer as the base” in the dialog.

Figure 10.85. Image for examples. Image for example: four layers on a large canvas 150x150 (they might be images): red is 10x10 pixels, green is 10x20 and yellow is 20x10. The background layer (blue:100x100) will not move, as the “Ignore lower layer” option will be checked. Note that, because of their position on canvas, layers in image seem to have an order different from the order in stack (the yellow layer is the top layer in image and is second in stack).



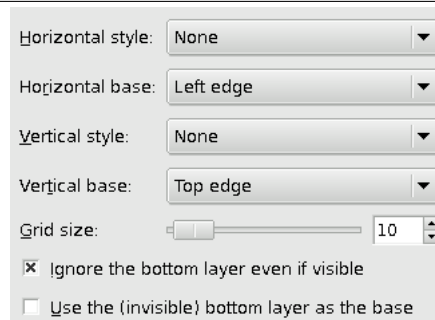
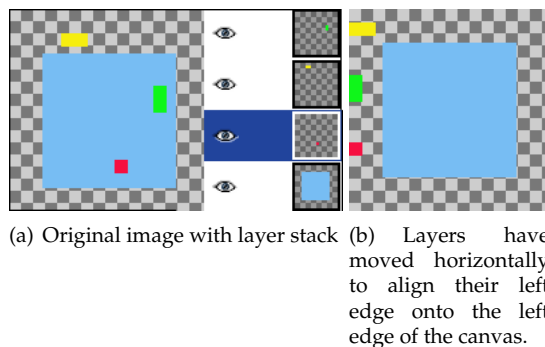
10.10.58.1. Activate Dialog

- This command can be accessed from an image menubar as **Layer** → **Align Visible layers**. There is no default shortcut.

10.10.58.2. The “Layer Align” dialog

Horizontal/Vertical Style This option controls how layers are horizontally/vertically moved in relation to each other:

- **None:** No change in horizontal/vertical position.
- **Collect:** This option aligns the selected “Horizontal/Vertical base” (Left edge, Centre, Right edge / Top edge, Center, Bottom edge) of every visible layer onto the canvas left/top edge. If you select Right Edge, layers disappear from the canvas; you can see them again by enlarging the canvas. If the “Bottom Layer as Base” option is checked, layers are aligned on the left/top edge of the bottom layer.

Figure 10.86. The “Layer Align” dialog La fenêtre de dialogue “Aligner les calques visibles”**Figure 10.87.** Horizontal collecting alignment (on canvas edge)

- **Fill (left to right / Top to bottom)** This option places the selected base of visible layers regularly, horizontally / vertically on the image, in the top to bottom order of the stack. The upper layer in the stack is placed on the leftest (uppest) position in the image. The lower layer in the stack is placed on the rightest (lowest) position in the image. Other layers are placed regularly between both positions. If the “Bottom layer as base” option is checked, the layer base is aligned onto the corresponding edge of the bottom layer.
 - **Fill (right to left / Bottom to top):** As above, this function reads layer stack from top to bottom, but displays layers right to left, bottom to top, regularly.
- Filling options need three visible layers at least.

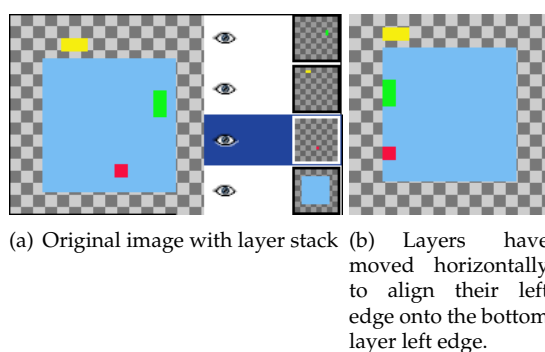
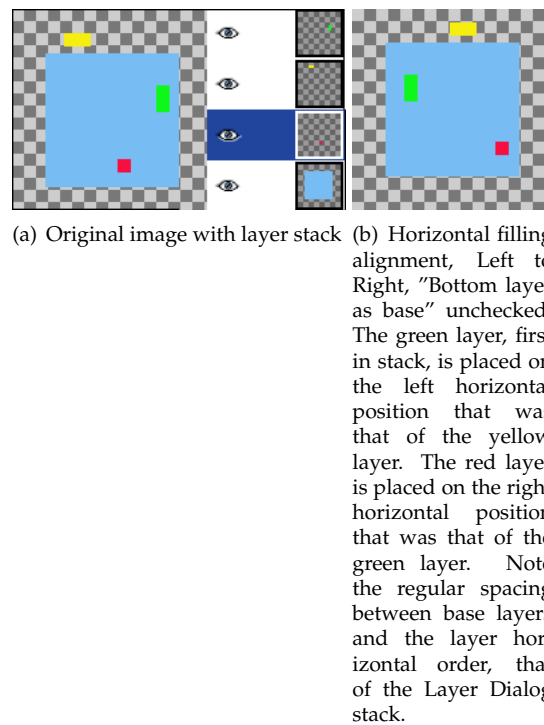
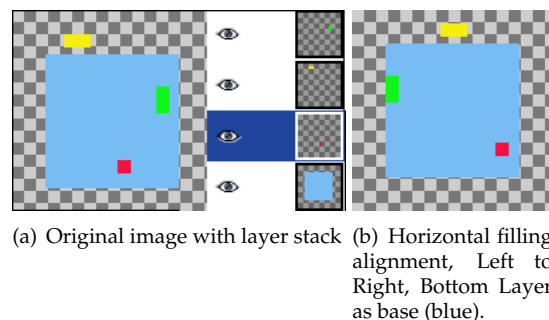
Figure 10.88. Horizontal collecting alignment (on bottom layer)

Figure 10.89. Horizontal filling alignment (canvas)**Figure 10.90.** Horizontal filling alignment (bottom layer)

10.11. Tools

10.11.1. Tools

All functions of this menu page are described with the Tool box. See [Toolbox](#)

10.12. Filters

10.12.1. Filters

In GIMP terminology, a *filter* is a plug-in that modifies the appearance of an image, in most cases just the active layer of the image. Not all of the entries in this menu meet that definition, however: the word "filter" is often abused to mean any plug-in regardless of what it does. Indeed, some of the things you will find in this menu do not modify images at all.

With the exception of the top three items, all of the entries in this menu are provided by plug-ins. Each plug-in decides for itself where it would like its menu entry to be placed. Therefore, the appearance of this menu can be completely different for each user. In practice, though, the appearance does not vary

Figure 10.91. Vertical filling alignment (bottom layer)

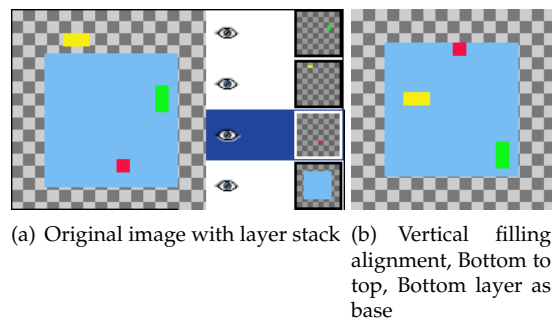
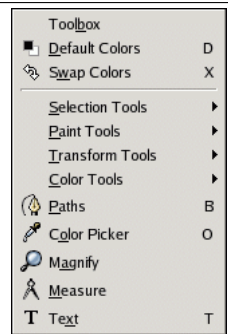


Figure 10.92. Contents of the Tools menu



all that much, because most plug-ins come with GIMP when it is installed, and of course they are always in the same places in the menu.


Plug-ins are not restricted only to the Filters menu: a plug-in can request to be placed in any menu. Indeed, a number of GIMP’s basic functions (for example, “Semi-flatten” in the Layer menu) are implemented by plug-ins. But the Filters menu is the default place for a plug-in to locate itself.

For general information on plug-ins and how to use them, see the section on [Plugins](#). Information on the filters that are provided with GIMP can be found in the [Filters](#) chapter. For filters you install yourself, you will of course have to obtain information elsewhere.

10.12.2. Repeat Last

“Repeat Last” repeats the most recently executed plugin, using the same settings at the last time it was run. It does not show a dialog or request confirmation.

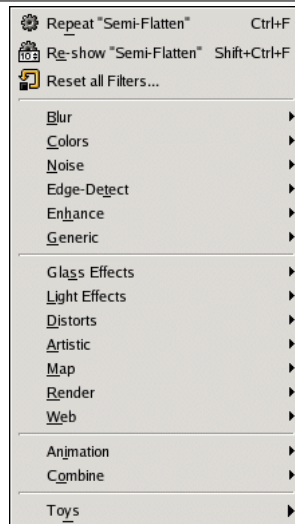
NOTE



It is important to realize that this command repeats the most recently executed *plugin*, regardless of whether it can be found in the Filters menu.

10.12.2.1. Activate Dialog

- This command can be accessed from an image menubar as **Filters** → **Repeat** “*filter*”,
- or by using the keyboard shortcut **Ctrl-F**.

Figure 10.93. The Filters menu

10.12.3. Re-show Last

“Re-show Last” interactively runs the most recently executed plugin. If the plugin is one that uses a dialog window, it does so here, with the settings initialized to the values you used the last time you ran the plugin. (Assuming the plugin is correctly programmed, that is.)

NOTE



It is important to realize that this command repeats the most recently executed *plugin*, regardless of whether it can be found in the Filters menu.

TIP



It is very common, especially for plugins that lack a preview, to have to adjust parameters several times before the results are satisfactory. The most efficient way to do this is to memorize the keyboard shortcuts for “undo” followed by “re-show last”: **Ctrl-Z** followed by **Ctrl-Shift-F**.

10.12.3.1. Activate Dialog

- This command can be accessed from an image menubar as **Filters** → **Re-show “*filter*”**,
- or by using the keyboard shortcut **Ctrl-Shift-F**.

10.12.4. Reset All Filters

Normally, each time you run an interactive plugin, the dialog comes up with settings initialized to the values you used the last time you ran it. Sometimes this can be very annoying, if you mess up the values and don’t remember what they were originally. One way to recover is to exit from GIMP and start again, but this command provides a slightly less desperate solution: it resets the values for *all* plugins to their defaults. Because it is a dramatic step, it asks you to confirm that you really want to do it. Be careful: this command is not undoable.

10.12.4.1. Activate Dialog

- This command can be accessed from an image menubar as **Filters** → **Reset All Filters...**

11. Filters

11.1. Filter introduction

A filter is a special kind of tool designed to take an input layer or image, apply a mathematical algorithm to it, and return the input layer or image in a modified format. The GIMP uses filters to achieve a variety of effects and those effects are discussed here.

The filters are divided into several categories:

- Blur
- Colors
- Noise
- Edge-Detect
- Enhance
- Generic
- Glass Effects
- Light Effects
- Distorts
- Artistic
- Map
- Render
- Web
- Animation
- Combine

11.2. Blur filters

11.2.1. Blur filters introduction

Figure 11.1. Original for demo



This is a set of filters that blur images, or parts of them, in various ways. If there is a selection, only the selected parts of an image will be blurred. There may, however, be some leakage of colors from the unblurred area into the blurred area. To help you pick the one you want, we will illustrate what each does when applied to the image shown at right. These are, of course, only examples: most of the filters have parameter settings that allow you to vary the magnitude or type of blurring.

Figure 11.2. Gaussian blur (radius 10)



Figure 11.3. Simple blur



The most broadly useful of these is the Gaussian blur. (Don't let the word "Gaussian" throw you: this filter makes an image blurry in the most basic way.) It has an efficient implementation that allows it to create a very blurry blur in a relatively short time.

If you only want to blur the image a little bit—to soften it, as it were—you might use the simple "Blur" filter. In Gimp 2.2 this runs automatically, without creating a dialog. The effect is subtle enough that you might not even notice it, but you can get a stronger effect by repeating it. In Gimp 2.0 the filter shows a dialog that allows you to set a "repeat count". If you want a strong blurring effect, this filter is too slow to be a good choice: use a Gaussian blur instead.

Figure 11.4. Selective blur



The Selective Blur filter allows you to set a threshold so that only pixels that are similar to each other are blurred together. It is often useful as a tool for reducing graininess in photos without blurring sharp edges. (In the example, note that the graininess of the background has been reduced.) The implementation is much slower than a Gaussian blur, though, so you should not use it unless you really need the selectivity.

The Pixelize filter produces the well-known "Abraham Lincoln" effect by turning the image into a set of large square pixels. (The **Oilify** filter, in the Artistic Filters group, has a similar effect, but with irregular blobs instead of perfectly square pixels.)

NOTE

You can find a nice explanation of the Abraham Lincoln effect at <http://www.michaelbach.de/ot/fcs.mosaic/>.

The Motion Blur filter blurs in a specific direction at each point, which allows you to create a sense of motion: either linear, radial, or rotational.

Finally, the Tileable Blur filter is really the same thing as a Gaussian blur, except that it wraps around the edges of an image to help you reduce edge effects when you create a pattern by tiling multiple copies of the image side by side.

Figure 11.5. Pixelize



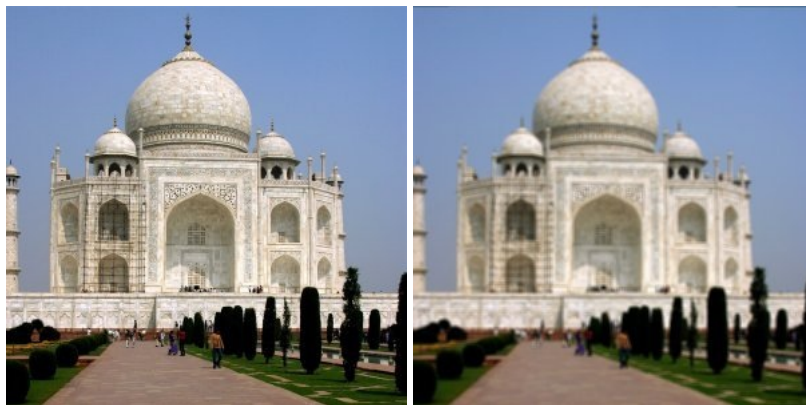
Figure 11.6. Motion blur

**NOTE**

Tileable Blur is actually implemented by a Script-Fu script that invokes the Gaussian blur plug-in.

11.2.2. Blur**11.2.2.1. Overview**

Figure 11.7. The Blur filter applied to a photograph



(a) Original

(b) Blur applied

The simple Blur filter produces an effect similar to that of an out of focus camera shot. To produce this blur effect, the filter takes the average of the present pixel value and the value of adjacent pixels and sets the present pixel to that average value.

Filter advantage is its calculation speed. It suits big images.

Filter disadvantage is that its action is hardly perceptible on big images, but very strong on small images.

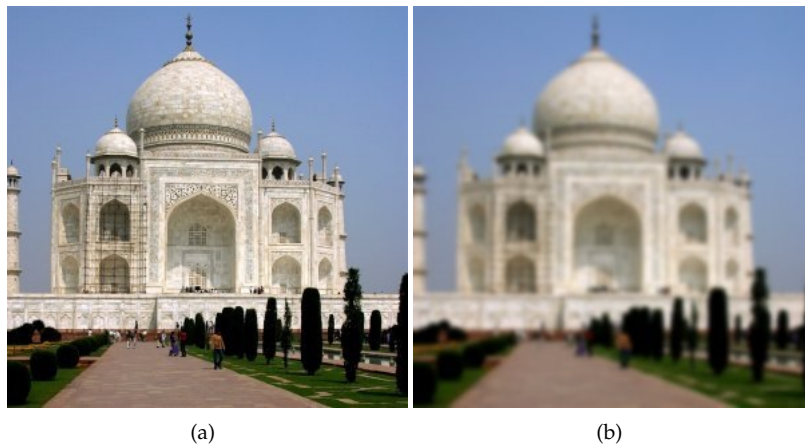
11.2.2.2. Activate the filter

This filter can be called from the image menu: **Filters** → **Blur** → **Blur**

11.2.3. Gaussian Blur

11.2.3.1. Overview

Figure 11.8. From left to right: original, filter applied.



You can find this filter in the image menu under **Filters** → **Blur** → **Gaussian Blur**

The IIR Gaussian Blur plug-in acts on each pixel of the active layer or selection, setting its Value to the average of all pixel Values present in a radius defined in the dialog. A higher Value will produce a higher amount of blur. The blur can be set to act in one direction more than the other by clicking the Chain Button so that it is broken, and altering the radius. GIMP supports two implementations of Gaussian Blur: IIR G.B. and RLE G.B. They both produce the same results, but each one can be faster in some cases.

11.2.3.2. Options

Figure 11.9. “Gaussian” filter parameters settings



Blur Radius Here you can set the blur intensity. By altering the ratio of horizontal to vertical blur, you can give the effect of a motion blur. You can choose the unit with the drop list.

Blur Method IIR: IIR stands for “Infinite Impulse Response”. This blur works best for large radius values and for images which are not computer generated.

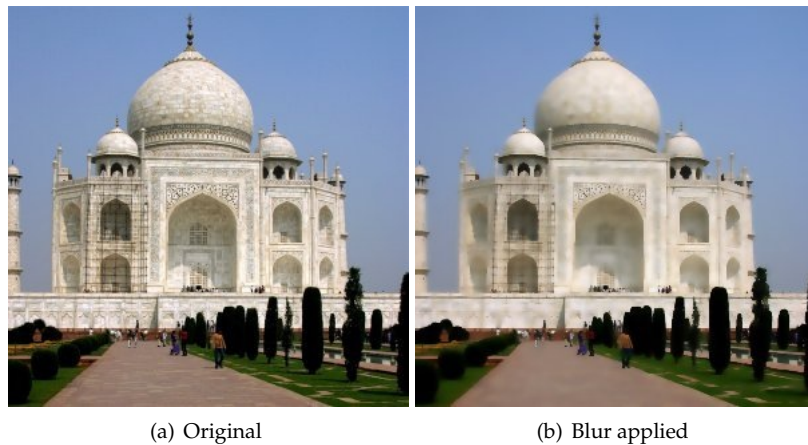
RLE: RLE stands for run-length encoding. RLE Gaussian Blur is best used on computer-generated images or those with large areas of constant intensity.

11.2.4. Selective Gaussian Blur

11.2.4.1. Overview

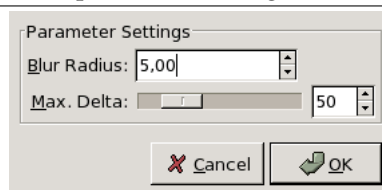
You can find this filter in the image menu under **Filters** → **Blur** → **Selective Gaussian Blur**

Contrary to the other blur plug-ins, the Selective Gaussian Blur plug-in doesn’t act on all pixels: blur is applied only if the difference between its value and the value of the surrounding pixels is less than a defined Delta value. So, contrasts are preserved because difference is high on contrast limits. It is used

Figure 11.10. The Selective Gaussian Blur filter

to blur a background so that the foreground subject will stand out better. This add a sense of depth to the image with only a single operation.

11.2.4.2. Options

Figure 11.11. “Selective Gaussian” filter parateters settings

Blur Radius Here you can set the blur intensity, in pixels.

Max. Delta Here you can set the maximum difference (0-255) between the pixel value and the surrounding pixel values. Above this Delta, blur will not be applied to that pixel.

11.2.5. Motion Blur

11.2.5.1. Overview

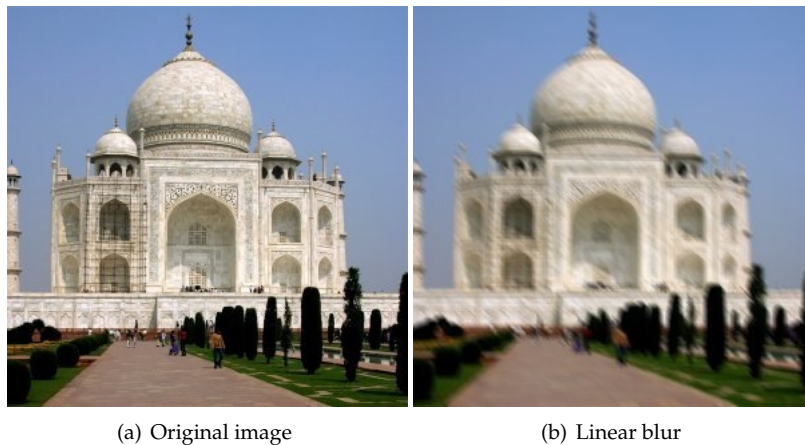
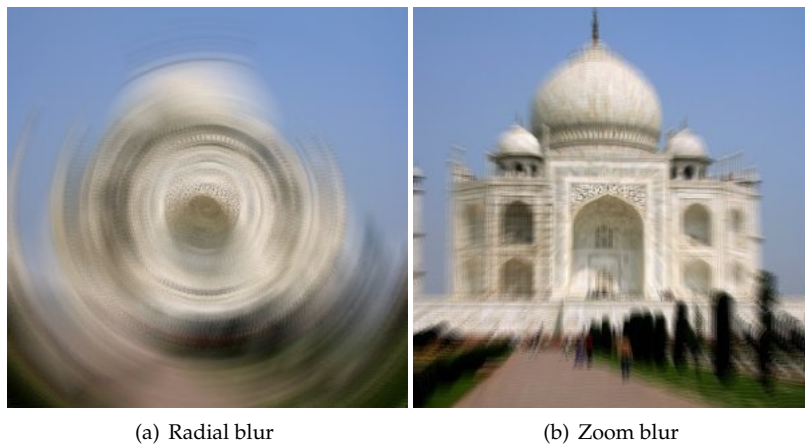
You can find this filter in the image menu under **Filters** → **Blur** → **Motion Blur**

The Motion Blur filter creates a movement blur. The filter is capable of Linear, Radial, and Zoom movements. Each of these movements can be further adjusted, with Length, or Angle settings available.

11.2.5.2. Options

Blur Type

Linear Linear motion is a blur that travels in a single direction, horizontally, for example. In this case, Length means as Radius in other filters: it represents the blur intensity. More Length will result in more blurring. Angle describes the actual angle of the movement. Thus, a setting of 90 will produce a vertical blur, and a setting of 0 will produce a horizontal blur.

Figure 11.12. Starting example for Motion Blur filter**Figure 11.13.** Using example for Motion Blur filter

Radial Radial motion blur creates a circular blur. The Length slider is not important with this type of blur. Angle on the other hand, is the primary setting that will affect the blur. More Angle will result in more blurring in a circular direction. The Radial motion blur is similar to the effect of a spinning object. The center of the spin in this case, is the center of the image.

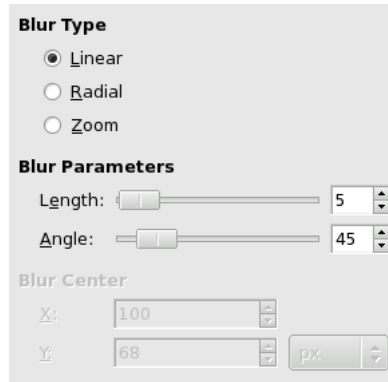
Zoom Zoom blurring produces a blur that radiates out from the center of the image. The center of the image remains relatively calm, whilst the outer areas become blurred toward the center. This filter option produces a perceived forward movement, into the image. Length is the main setting here, and affects the amount of speed, as it were, toward the center of the image.

Blur settings

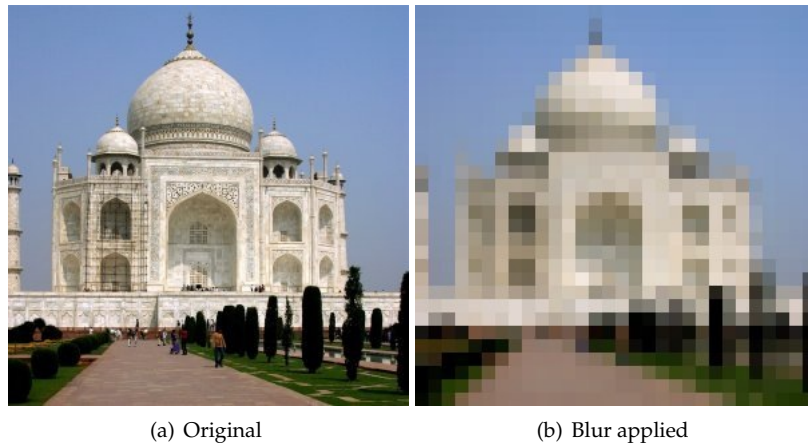
Length Length: This slider controls the distance pixels are moved (0 - 256)

Angle Angle: (0 - 360) As seen above, Angle slider effect depends on Blur type.

Blur Center With this option, you can set the starting point of movement. Effect is different according to the Blur Type you have selected. With Radial Type for instance, you set rotation center. With Zoom Type, vanishing point. This option is greyed out with Linear type.

Figure 11.14. “Motion Blur” filter options**TIP**

You have to set blur center coordinates. Unfortunately, you can't do that by clicking on the image. But, by moving mouse pointer on the image, you can see its coordinates in the lower left corner of the image window. Only copy them out into input boxes.

11.2.6. Pixelise**11.2.6.1. Overview****Figure 11.15.** From left to right: Before and after applying Pixelise filter

(a) Original

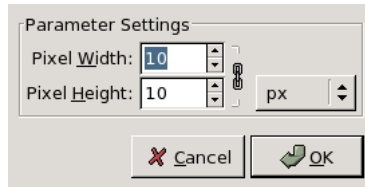
(b) Blur applied

You can find this filter in the image menu under **Filters** → **Blur** → **Pixelise**

The Pixelize filter renders the image using large color blocks. It is very similar to the effect seen on television when obscuring a criminal during trial. It is used for the “Abraham Lincoln effect”: see http://www.michaelbach.de/ot/fcs_mosaic/.

11.2.6.2. Options

Pixel Width Here you can set the desired width of the blocks.

Figure 11.16. “Pixelize” filter options

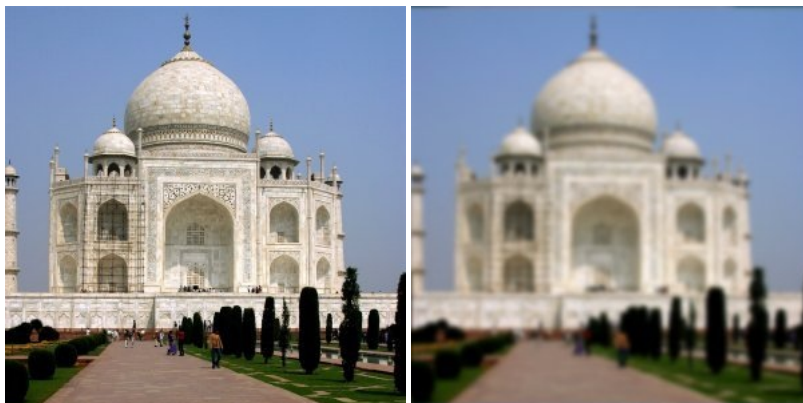
Pixel Height Here you can set the height of the blocks.

Chain Button If the chain is broken, you can set width and height separately. Otherwise, they are linked.

Unit Input Box Here you can select the unit of measure for height and width.

11.2.7. Tileable Blur

11.2.7.1. Overview

Figure 11.17. From left to right: original, tileable blur applied

(a) Original

(b) Blur applied

You can find this filter in the image menu under **Filters** → **Blur** → **Tileable Blur**

This tool is used to soften tile seams in images used in tiled backgrounds. It does this by blending and blurring the boundary between images that will be next to each other after tiling.

TIP

If you want to treat only images borders, you can't apply filter to the whole image. The solution to get the wanted effect is as follows:

Duplicate layer(**Layer** → **Duplicate Layer**) and select it to work on it.



Apply "Tileable Blur" filter with a 20 pixels radius to this layer.

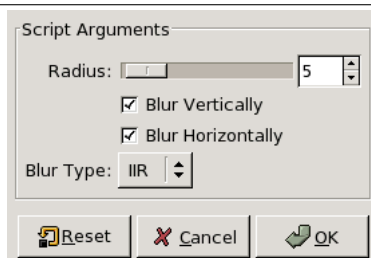
Select all (**Ctrl-A**) and reduce selection (**Selection** → **Shrink**) to create a border with the wanted width.

Delete selection with **Ctrl-K**.

Merge layers with **Layer** → **Merge down**

11.2.7.2. Options

Figure 11.18. "Tileable Blur" filter options



Blur Radius The bigger the radius, the more marked is the blur. By selecting **Horizontal** and **Vertical**, you can make the horizontal and vertical borders tileable.

Blur Type IIR: for photographic or scanned images.

RLE: for computer-generated images.

11.3. Color filters**11.3.1. Introduction to Color Filters**

The Color filters group contains several filters to modify colors in an image, a layer or a selection. You can find filters to compose, decompose, uncolor colors, and many other effects.

11.3.2. Adjust FG-BG**11.3.2.1. Overview**

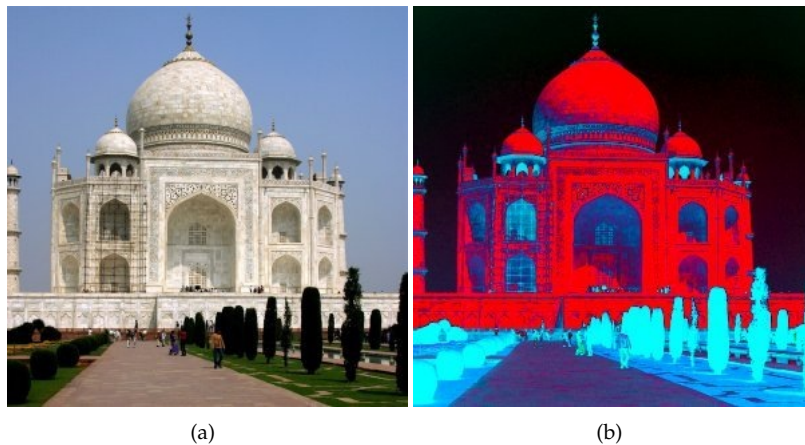
This filter is found in **Filters** → **Colors** → **Map** → **Adjust FG-BG**.

Adjust FG-BG belongs to color map filters which make connection between a color source and an image. Here, image pixels having ForeGround color will turn to black while pixels having BackGround color will turn to white. Other colors will turn to their complementary color. There will be no change if FG is black and BG is white.

11.3.2.2. Options

This filter has no option.

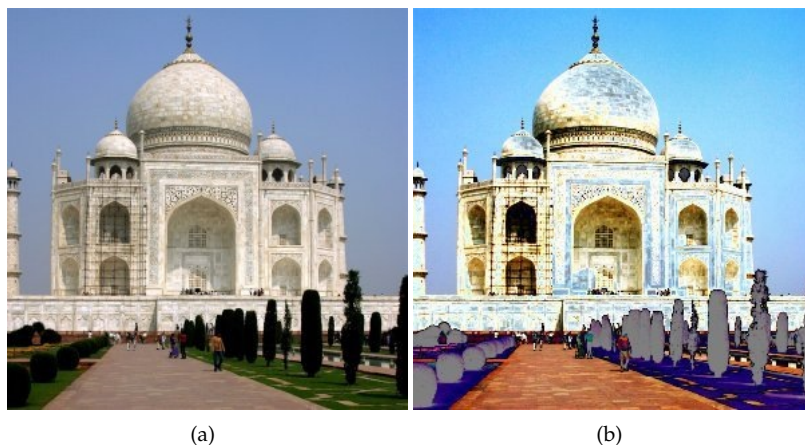
Figure 11.19. From left to right: original image, after applying Adjust FG BG (FG:blue, BG:red)



11.3.3. Alien Map 2

11.3.3.1. Overview

Figure 11.20. Alien Map 2 filter example



This filter is found in **Filters** → **Colors** → **Map** → **Alien map 2**.

This filter renders very modified colors by applying trigonometric functions. Alien Map 2 can work on **RGB** and **HSV**.

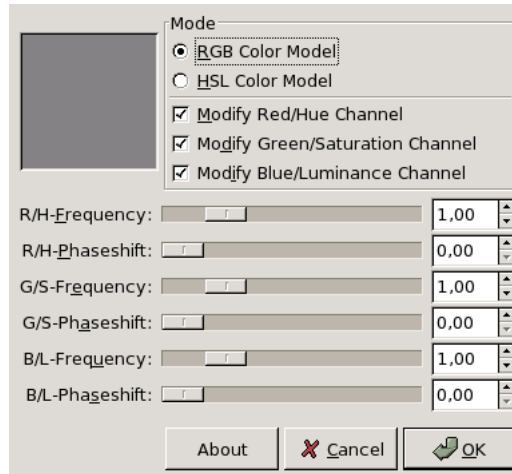
11.3.3.2. Options

Preview This preview displays results of filter application interactively.

Mode Radio buttons **RGB Color Channel** and **HSV Color Channel** let you select the color space you want to use.

Check boxes **Modify ... Channel** let you select RGB/HSV Channel you want to work with.

Sliders For each channel, you can set Frequency (0-5) and Phaseshift (0-360) of sine-cosine functions, using either sliders or input boxes and their arrowheads.

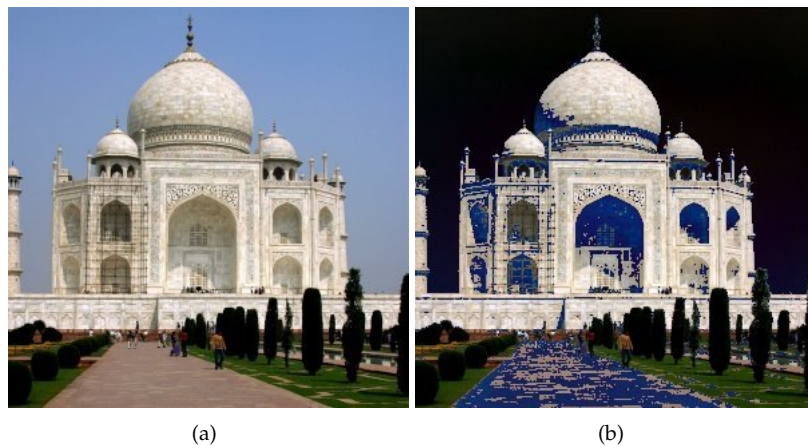
Figure 11.21. Options for the “Alien Map 2” filter

Frequency around 0.3 to 0.7 provides a curve that is similar to the linear function (original image), only darker or with more contrast. As you raise the frequency level, you’ll get an increasing variation in pixel transformation, meaning that the image will get more and more “alien”.

Phase alters the value transformation. 0 and 360 degrees are the same as a sine function and 90 is the same as a cosine function. 180 inverts sine and 270 inverts cosine.

11.3.4. Two Colors Exchange

11.3.4.1. Overview

Figure 11.22. From left to right: Original image, after applying Color Exchange (Blue to black)

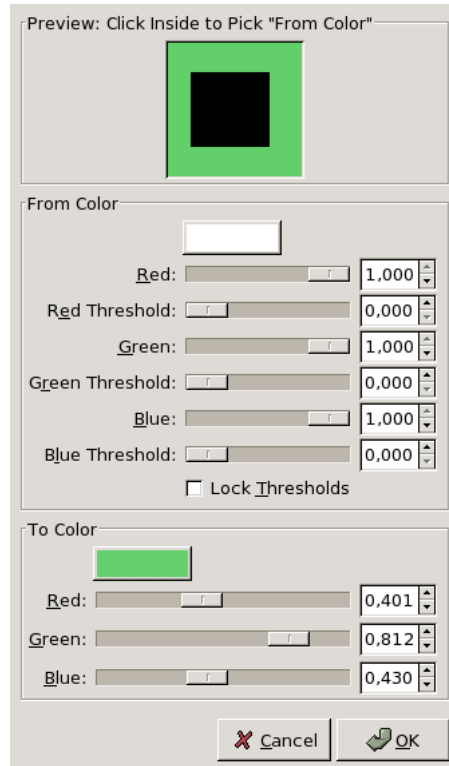
This filter is found in **Filters** → **Colors** → **Map** → **Color Exchange**.

This filter replaces a color with another one.

11.3.4.2. Options

Preview In this preview, a part of the Image is displayed. A selection smaller than preview will be complete in preview. A bigger one will be cut out to be adapted to the preview.

If you click inside preview, clicked pixel color will be selected and will appear as From Color (this no longer works in spite of the announce in dialog).

Figure 11.23. Option of “Two color exchange” filter

From color In this section, you can choose the color to be used to select pixels that will be concerned by color exchange.

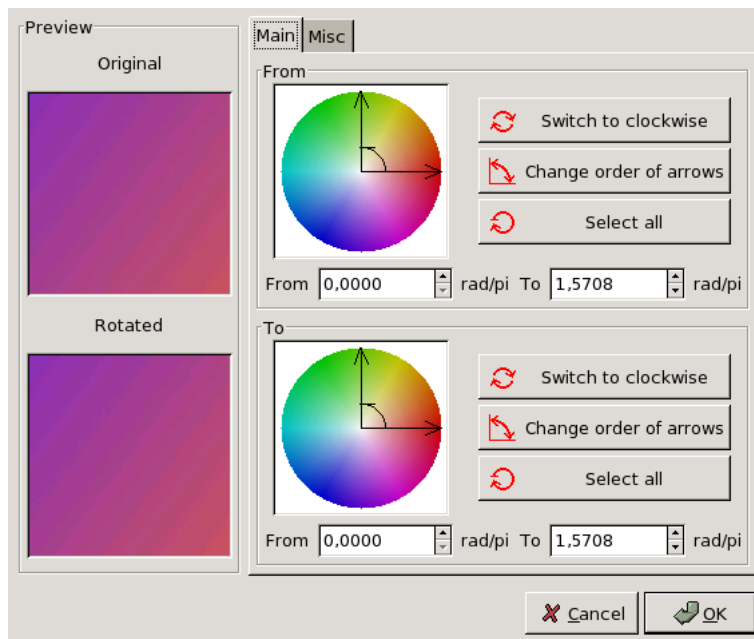
Three sliders for RVB colors: If you have clicked on preview, they are automatically positioned. But you can change them. Each slider acts on color intensity. Input boxes and arrowheads work the same. Result is interactively displayed in From swatch box.

Three sliders for thresholds, for each color. The higher the threshold, the more pixels will be concerned. Result is interactively displayed in Preview.

Lock Thresholds: This option locks threshold sliders which will act all the same.

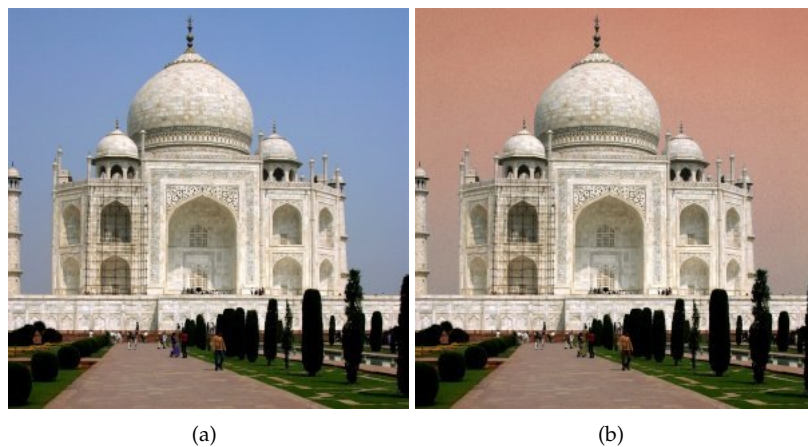
To color Three cursors allow to select the color that pixels will have. Result is displayed in swatch box and in preview. You can also click on the color dwell to get a color selector.

11.3.5. Colormap Rotation



11.3.5.1. Overview

Figure 11.24. From left to right: Original image, after applying filter



This filter is found in **Filters** → **Colors** → **Map** → **Color Map Rotation**.
Colormap Rotation lets you exchange one color range to another range.

11.3.5.2. Main Options

You have there two color circles, one for the "From" color range and the other for the "To" color range:

From The **Color Circle**: Two axis to define "From" range. The curved arrow in angle lets to recognise "From" axis and "To" axis of range. Click-drag these axis to change range.

Switch to Clockwise/Counterclockwise: Sets the direction the range is going.

Change Order of Arrows: Inverts From and To axis. This results in an important color change as colors in selection angle are different.

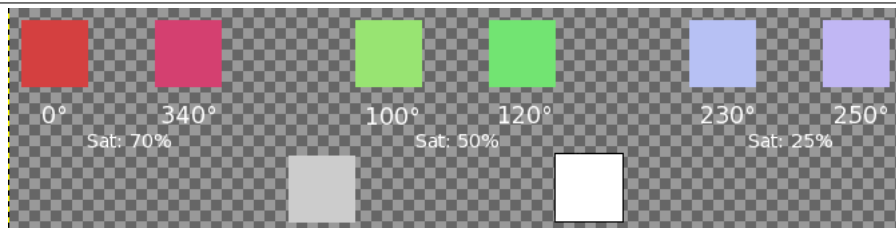
Select All selects the whole color circle.

From and **To** boxes display start axis and end axis positions (in rad/PI) which are limiting the selected color range. You can enter these positions manually or with help of arrow-heads.

To This section options are the same as "From" section ones.

11.3.5.3. Grey Options

Figure 11.25. Base image for Grey Options. Three sectors are defined for Red, Green and Blue with different saturations. Grey and White colors are represented (0% Sat).



In this tab, you can specify how to treat gray. By default, grey is not considered as a color and is not taken in account by the rotation. Here, you can convert slightly saturated colors into grey and you can also convert grey into color.

Grey Color Circle At center of this color circle is a small "define circle". At center, it represents grey. If you increase grey threshold progressively, colors with saturation less than this threshold turn to grey.

Then, if you pan the define circle in the color circle, or if you use input boxes, you define **Hue** and **Saturation**. This color will replace all colors you have defined as grey. But result depends on Grey Mode too.

Grey Mode The radio buttons **Treat As This** and **Change As This** determine how your previous choices will be treated:

- With **Change As This**, grey will take the color defined by the define circle directly, without any rotation, whatever its position in the color circle.
- With **Treat As This**, grey will take the color defined by the define circle after rotation, according to "From" and "To" choices you made in the Main tab. With this option, you can select color only in the "From" sector, even if it is not visible in Grey tab.

You specify there how much saturation will be considered grey. By increasing progressively saturation, you will see an enlarging circle in color circle and enlarging selected areas in Preview if "Continuous update" is checked. In a black to white gradient, you can see enlarging color replacement as you increase threshold very slowly.

Figure 11.26. Grey Mode. The small circle is on yellow and mode is “Change As This”. Blue has changed to yellow. Note that Grey and White did so too.

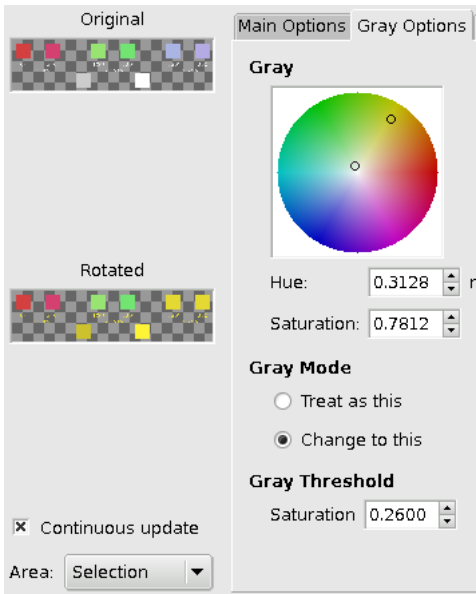
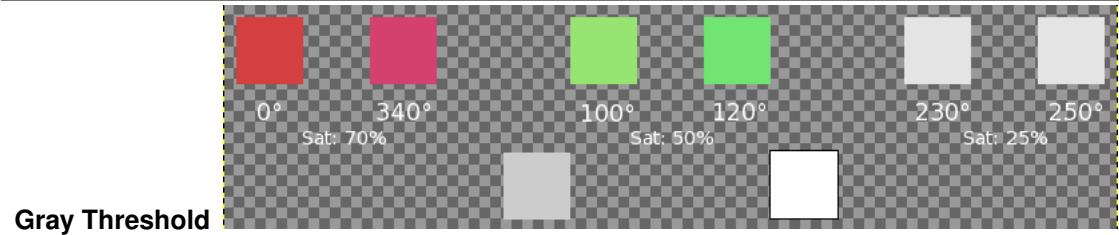


Figure 11.27. Gray Threshold. Grey-threshold is 0.25: the blue sector (sat 0.25) has turned to Grey (Note that Grey and White, that are 0% Sat., are not concerned).



11.3.5.4. Previews

Original and Rotated The Original preview displays a thumbnail of the original image and the Rotated preview displays color changes interactively, before they are applied to the Image.

Continuous Update **Continuous Update** displays color changes continuously in the Rotated preview.

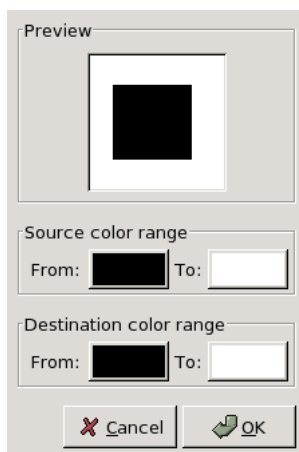
Area In this drop down list, you can select between

- **Entire Layer:** works on the whole layer (The image if there is no selection).
- **Selection:** displays selection only,
- **Context:** displays selection in image context.

11.3.5.5. Units

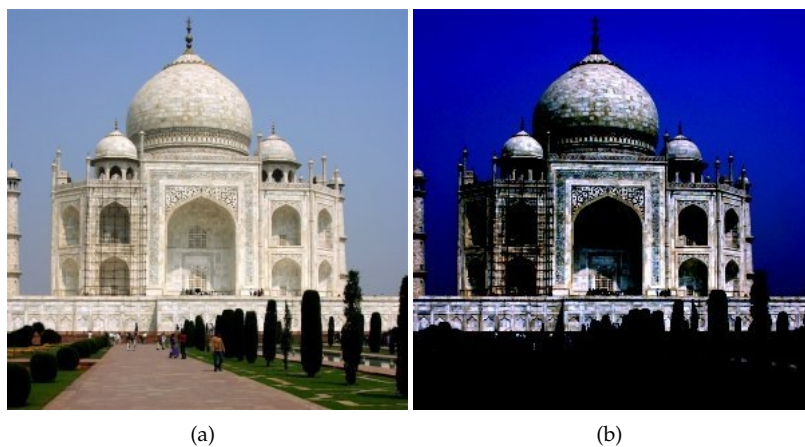
You can select here the angle unit used to locate colors in the Hue/Saturation circle. This choice is valid only for the current filter session: don't click on Valid just after selecting unit, return to the wanted tab!

11.3.6. Map Color Range



11.3.6.1. Overview

Figure 11.28. From left to right: Original image, after applying filter



This filter is found in **Filters** → **Colors** → **Map** → **Color Range Mapping**.

Unlike Exchange filter, Map Color Range maps a defined color range against another defined color range.

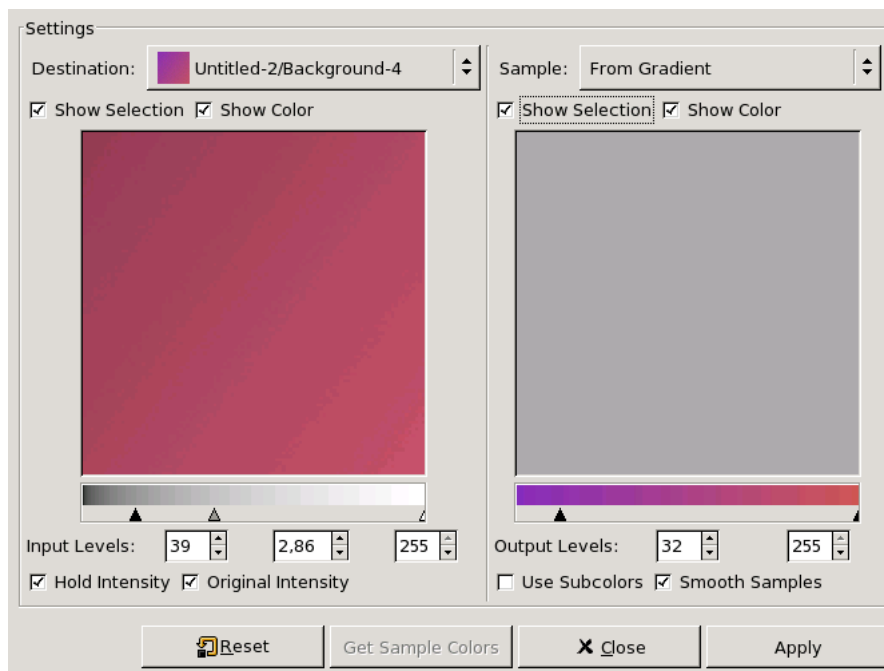
11.3.6.2. Options

Preview Preview: This Preview displays color changes interactively, before they are applied to Image.

Color Source Range The two **Color Swatch Boxes** allow you to define **From** and **To** limits of source color range. When you click on a box, you call the Gimp's **Color selector**.

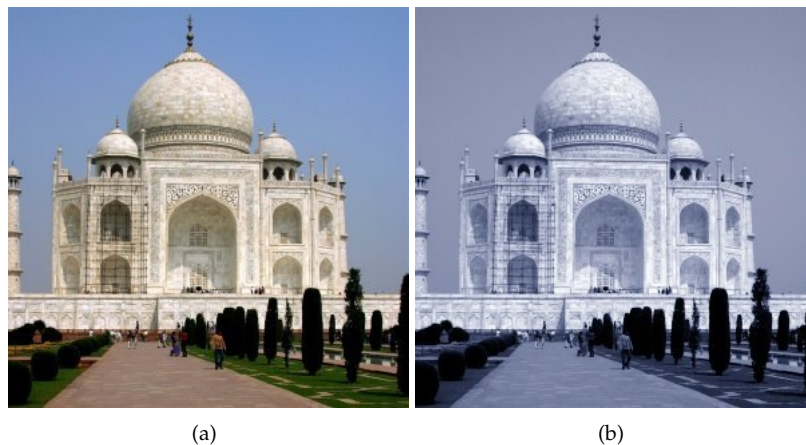
Destination Color Range The two *Color Swatch Boxes* allow you to define **From** and **To** limits of destination color range. When you click on a box, you call the Gimp's **Color selector**.

11.3.7. Sample Colorize



11.3.7.1. Overview

Figure 11.29. From left to right: Original image, after applying filter



This filter is found in **Filters** → **Colors** → **Map** → **Sample Colorize**.

This filter allows you to colorize old black-and-white images by mapping a color source image or a gradient against it.

CAUTION

Your gray-tone image must be changed to RGB before using this filter (Image/Image>Mode>RGB).

11.3.7.2. Options

The filter window is divided into two parts: Destination on the left, Sampling on the right.

Destination, Sample By default, displayed image previews reproduce the image you invoked the filter from.

The sample can be the whole preview, or a selection of this preview. With the drop list, you can select another sample-image among the names of images present on your screen when you called the filter. If you choose **From Gradient** (or **From Inverse Gradient**), the selected gradient in Gradient Dialog (or its inverse) will be the sample. It will be displayed into the gradient bar below the sample preview. The sampling preview is greyed out and two cursors allow you to select the gradient range that will be applied to the image or selection.

Destination is, by default, the source image. The drop list displays the list of images present on your screen when you evoked the filter and allow you to select another destination image. If there is a selection in this image, it will be gray-scaled, else the whole preview will be gray-scaled.

Show Selection This option toggles between the whole image and the selection, if it exists.

Show Colors This option toggles between colors and gray-scale.

Get Sample Colors When you click on this button, the gradient bar below the sample preview displays colors of the sample. If your sample holds few colors, transitions may be abrupt. Check **Smooth Sample Colors** option to improve them.

Use Subcolors is more difficult to understand. Let's say first that in a greyscale image there is information only for Value (luminosity, more or less light). In a RGB image, each pixel has information for the three colors and Value. So, pixels with different color may have the same Value. If this option is checked, colors will be mixed and applied to Destination pixels having that Value. If it is unchecked, then the dominating color will be applied.

Out Levels Two input boxes and two sliders act the same: they limit the color range which will be applied to destination image. You can choose this range accurately. Result appears interactively in destination preview.

In Levels Three input boxes and three sliders allow to fix importance of dark tones, mid tones and light tones. Result appears interactively in destination preview.

Apply Button When you are satisfied with the result on destination preview, click on **Apply** to apply results onto destination image.

Hold Intensity If this option is checked, the average light intensity of destination image will be the same as that of source image.

Original Intensity If this option is checked, the In levels intensity settings will not be taken in account: original intensity will be preserved.

11.3.8. Gradient Map

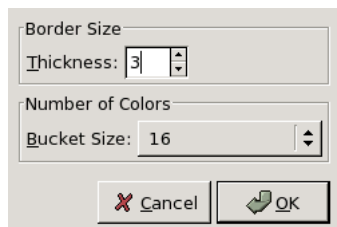
11.3.8.1. Overview

Figure 11.30. . Example of Gradient Mapping. Top: Original image. Middle: a gradient. Bottom: result of applying the gradient to the original image with the Gradient Map filter.



This filter uses the current gradient, as shown in the Brush/Pattern/Gradient area of the Toolbox, to recolor the active layer or selection of the image to which the filter is applied. To use it, first choose a gradient from the Gradients Dialog. Then select the part of the image you want to alter, and activate the filter by choosing **Filters** → **Colors** → **Map** → **Gradient Map** from the image menu. The filter runs automatically, without showing any dialog or requiring any further input. It uses image color intensities (0 - 255), mapping the darkest pixels to the left end color from the gradient, and the lightest pixels to the right end color from the gradient. Intermediate values are set to the corresponding intermediate colors.

11.3.9. Border Average



11.3.9.1. Overview

This filter is found in **Filters** → **Colors** → **Border Average**.

This tool calculates the average color in a border around active layer or selection. Calculated color becomes the foreground color in Toolbox. This filter is interesting when you have to find a Web page color background that differs as less as possible from your image border. The action of this filter is not registered in Undo History and can't be deleted with Ctrl+Z.

11.3.9.2. Options

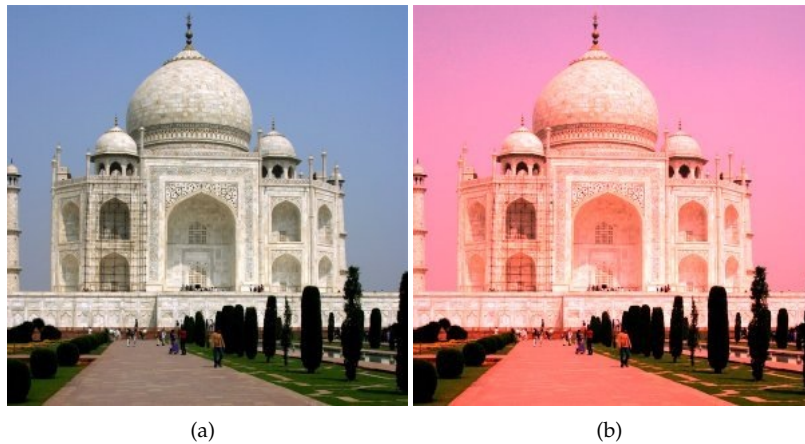
Border Size You can set there the border **Thickness** in pixels.

Number of Colors You can set there the **Bucket Size**, i.e the number of colors to be used when calculating the average color (1 - 256).

11.3.10. Channel Mixer

11.3.10.1. Overview

Figure 11.31. From left to right: original image, after applying Channel Mixer filter

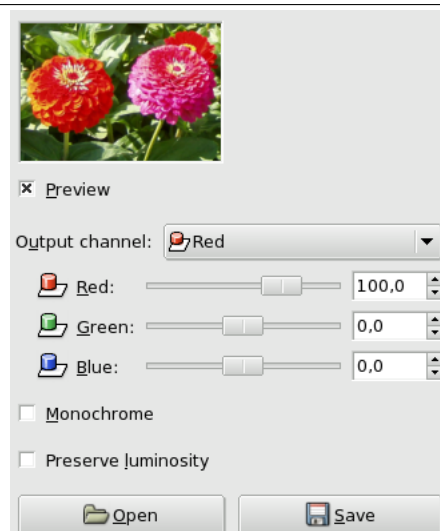


This filter is found in **Filters** → **Colors** → **Channel Mixer**.

This filter combines values of the RGB channels. It works with images with or without an alpha channel. It has monochrome mode and a preview.

11.3.10.2. Options

Figure 11.32. “Channel Mixer” filter options



Output Channel From this menu you select the channel to mix to. Choices are Red, Green, or Blue. It is insensitive when **Monochrome** option is checked.

Red, Green, Blue These three sliders set the contribution of red, green or blue channel to output. Can be negative.

Monochrome Sets all output channels to be the same. Makes the **Output Channel** menu insensitive.

Preserve Luminosity Maintains the luminosity at 100% regardless of the channel slider settings.

11.3.10.3. Buttons

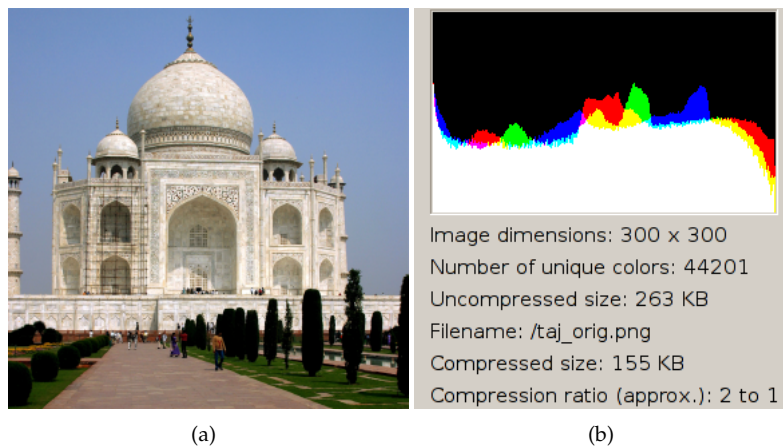
Open Load settings from a file.

Save Save settings to a file.

11.3.11. Colorcube Analysis

11.3.11.1. Overview

Figure 11.33. From left to right: Original image, after Colorcube Analysis of the image



This filter is found in **Filters** → **Colors** → **Colorcube Analysis**.

It gives data about image: dimensions, file size, color number, compression ratio...

11.3.11.2. Options

This filter has no option.

11.3.12. Colorify

11.3.12.1. Overview

This filter is found in **Filters** → **Colors** → **Colorify**.

It renders a greyscaled image like it is seen through colored glass.

11.3.12.2. Options

Color A color palette is available and you can select your own color by clicking on the **Custom Color** swatch.

Figure 11.34. From left to right: original image, after applying Colorify filter

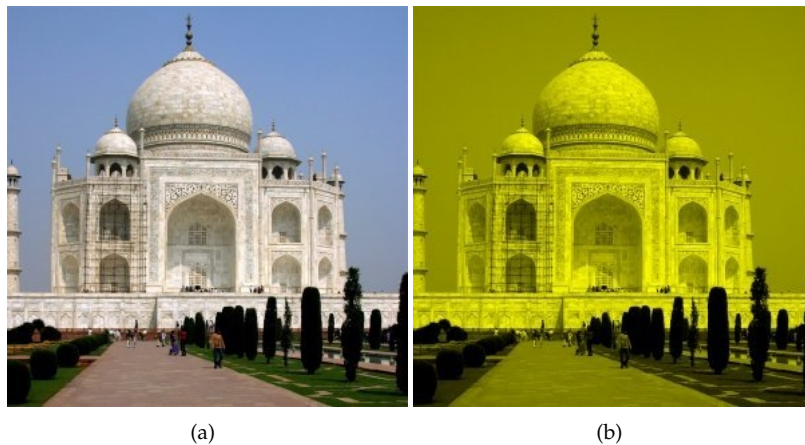
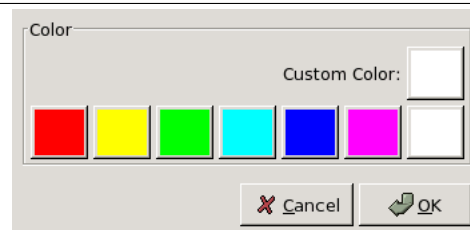
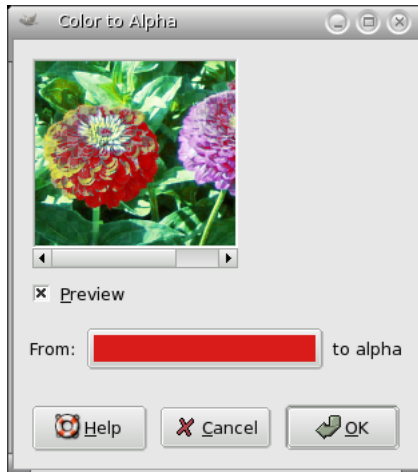


Figure 11.35. “Colorify” filter options



11.3.13. Color to Alpha



11.3.13.1. Overview

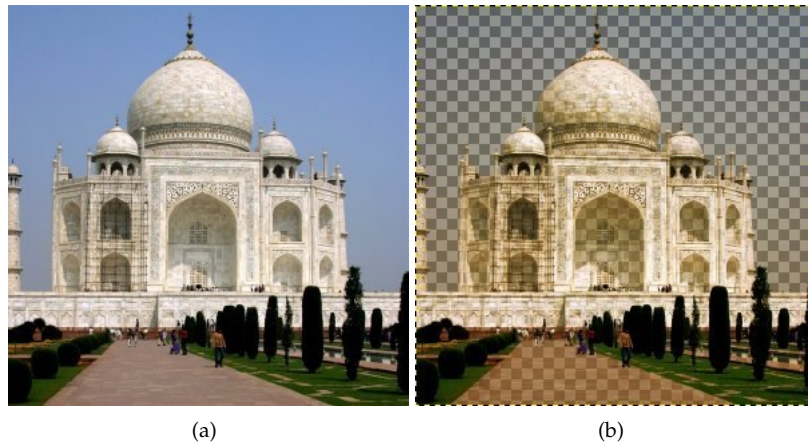
This filter is found in **Filters** → **Colors** → **Color to Alpha**.

The Color to Alpha filter makes transparent all pixels with a selected color. An Alpha channel is created. It will attempt to preserve anti-aliasing information by using a partially intelligent routine that replaces weak color information with weak alpha information. In this way, areas that contain an element of the selected color will maintain a blended appearance with their surrounding pixels.

11.3.13.2. Options

Color Clicking on the **From** color swatch provides a color selection dialog where you can select a color. If selection of a precise color is required, use the Color Picker then drag and drop the selected color

Figure 11.36. From left to right: original image, after applying Color to Alpha filter (Blue to transparency)

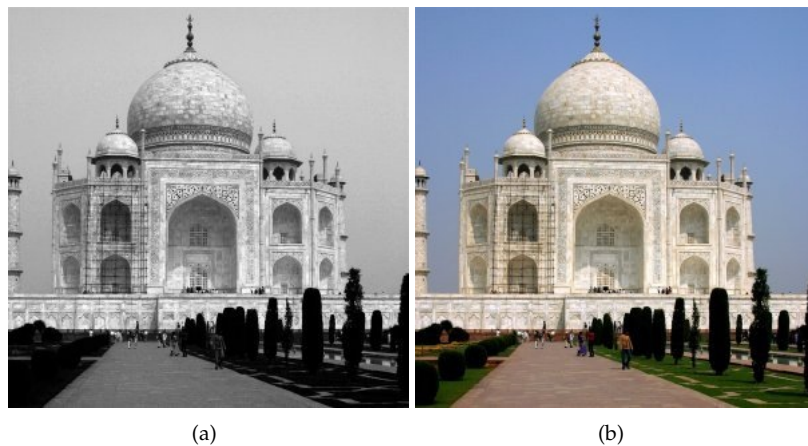


from the color picker to the From color swatch. Right clicking on the color will display a menu where you can select Foreground or Background colors, White or Black.

11.3.14. Compose

11.3.14.1. Overview

Figure 11.37. From left to right: Decomposed image (RGB decomposition), composed image.



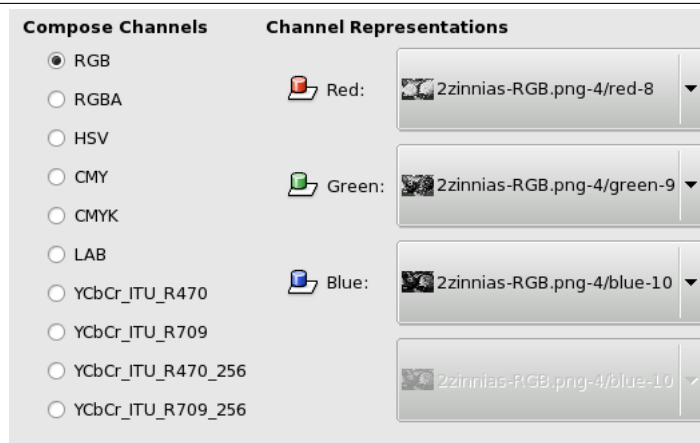
This filter is found in **Filters** → **Colors** → **Compose** This filter is active in Filters/Colors after using Decompose.

This filter reconstructs an image from its RGB, HSV... components.

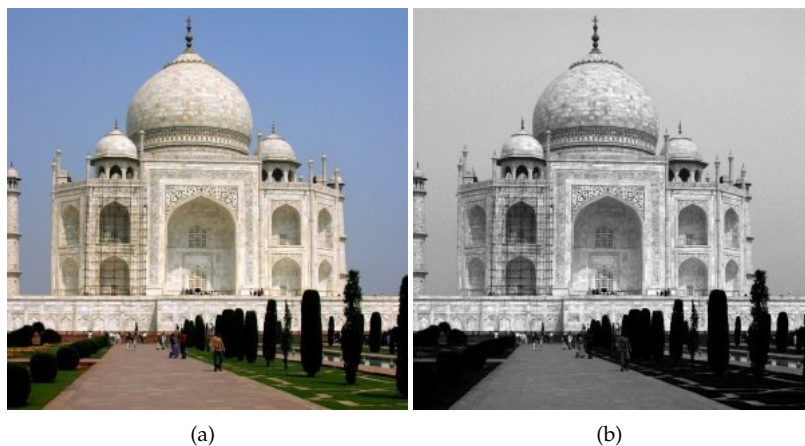
11.3.14.2. Options

Compose Channels You can select there the color space to be used: RGB, HSV... The options are described in the following **Decompose** plug-in.

Channel Representation Allows you to select which channel will be affected to each image channel.

Figure 11.38. “Compose” filter options**TIP**

If Compose options are different from Decompose ones, for instance an image decomposed to RGB then re-composed to LAB, you will get interesting color effects. Test it!

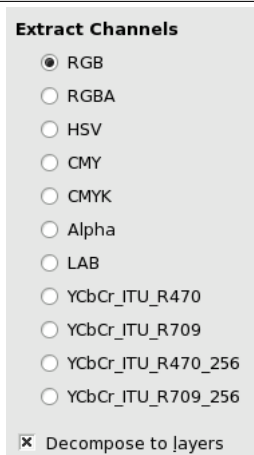
11.3.15. Decompose**11.3.15.1. Overview****Figure 11.39.** From left to right: Original image, Decomposed image (RGB decomposition).

This filter is found in **Filters** → **Colors** → **Decompose**

This filter separates an image into its different components (RGB, HSV...).

11.3.15.2. Options

Decompose to Layers If this option is checked, a new grey-scaled image is created, with each layer representing one of the channels of the selected mode. If this option is not checked, every channel is represented with a specific image automatically and clearly named in the name bar.

Figure 11.40. “Decompose” filter options

Following options are described with “Decompose to layers” checked.

RGB Decomposing If the RGB radio button is clicked, a grey level image is created with three layers (Red, Green and Blue), and two channels (Grey and Alpha).

This function is interesting when using Threshold tool. You can also perform operations like cutting, pasting or moving selections in a single RGB channel. You can use an extracted grayscale as a selection or mask by saving it in a channel (right-click>Select>Save to a channel).

RGBA Decomposing If the RGBA radio button is clicked, a image is created similar at the RGB Decomposing with a additional Alpha layer filled with the transparencies values of the source image. Full transparent pixels are black and the full opaque pixels are white.

HSV Decomposing This option decomposes image into three greyscaled layers, one for Hue, one for Saturation and another for Value.

Although **Hue** is greyscaled, it does represent hues. In color circle, white and black are starting and arrival points and are superimposed. They represent Red color at top of circle. Grey intermediate levels are corresponding to intermediate hues on circle: dark grey to orange, mid grey to green and light grey to magenta.

Saturation and **Value**: White is maximum Saturation (pure color) and maximum Value (very bright). Black is minimum Saturation (white) and minimum Value (black).

CMY Decomposing This option decomposes image into three greyscaled layers, one for Yellow, one for Magenta and another for Cyan.

This option might be useful to transfer image into printing softwares with CMY capabilities.

CMYK Decomposing This option is similar at the **CMY Decomposing** with an additional layer for Black.

This option might be useful to transfer image into printing softwares with CMYK capabilities.

Alpha Decomposing This option extracts the image transparency stored in the Alpha channel in **Channel dialog** in a separate image. The full transparent pixels are Black the full opaque pixels are white. The graytones are smooth transitions of the transparency in the source image.

LAB Decomposing This option decomposes image into three greyscaled layers, layer “L” for Luminance, layer “A” for colors between green and red, layer “B” for colors between blue and yellow.

The LAB Decomposing is a color model of the Luminance-Color family. A channel is used for the Luminosity while two other channels are used for the Colors. The LAB color model is used by Photoshop.

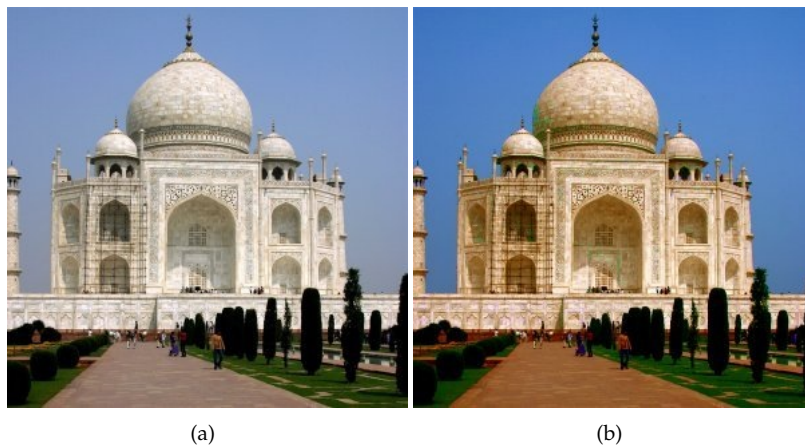
YCbCr Decomposing In GIMP there is four YCbCr decompositions with different values. Each option decomposes image in three greyscaled layers, a layer for Luminance and two other for blueness and redness.

The YCbCr color model also called YUV is now used for digital video (initially for PAL analog video). It's based on the idea that the human eye is most sensitive to luminosity, next to colors. The YCbCr Decomposing use a transformation matrix and the different options are different values recommended by ITU (International Telecommunication Union) applied to the matrix .

11.3.16. Filter Pack

11.3.16.1. Overview

Figure 11.41. From left to right: Original image, FilterPack (more Blue, more Saturation)



This tool offers you a collection of unified filters to treat the image. Of course, same functions can be performed by particular filters, but you have here an interesting, intuitive, overview.

11.3.16.2. Starting filter

This filter is found in the image menu, via **Filters** → **Colors** → **Filter Pack**.

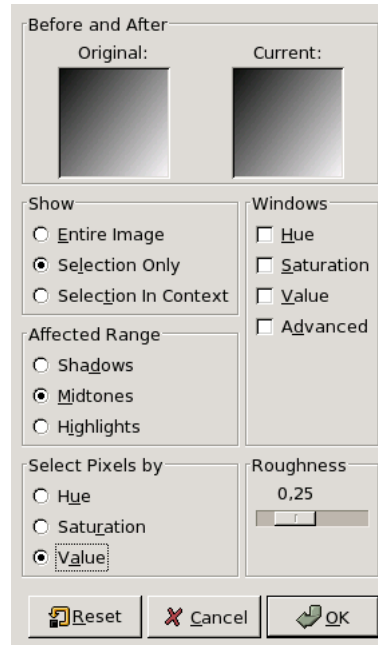
11.3.16.3. Options

Original and Current previews Two previews display respectively before treatment and after treatment images.

Show **Show** sets what you want to preview:

- **Entire image**
- **Selection only:** if selection exists.
- **Selection in context:** the selection within the image.

Affected range **Affected Range** allows you to set which brightness you want to work with.

Figure 11.42. All the options for filter “Filter Pack”

- **Shadows:** dark tones.
- **Midtones**
- **Highlights:** bright tones

Select pixels by Determines what HSV channel the selected range will affect. You can choose between:

- **Hue**
- **Saturation**
- **Value**

Roughness This slider sets how image will change when you click on a window: taking a short step or a large one (0 - 1).

Windows You can choose between:

- **Hue** makes one preview for each color appear. By clicking successively on a color, you add to this color into the affected range, according to Roughness. To subtract color, click on the opposite color.
- **Saturation:** Three previews for more or less saturation.
- **Value:** Three previews for more or less luminosity.
- **Advanced:** developed later.

Advanced Options

Preview Size Something like a zoom on previews. Normal size is 80.

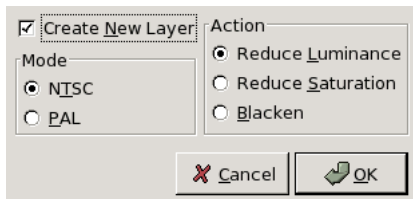
Smoothness of Aliasing This relates to the transition between tones. When the slider is set to zero, curve is rectangular and transition is abrupt. Small triangles are used to locate transitions between tones.

TIP



In spite of Preview Size option, this size is often too small. You can compensate this by working on an enlarged selection, for instance a face on a photo. Then, you invert selection to work on the other part of the image.

11.3.17. Hot



11.3.17.1. Overview

This filter is found in the image menu via **Filters** → **Colors** → **Hot**

It identifies and modifies pixels which might cause problem when displayed onto PAL or NTSC TV screen.

11.3.17.2. Options

Mode You have to select the TV mode: PAL or NTSC.

Action You can select:

- **Reduce Luminency**
- **Reduce Saturation**
- **Blacken**: this will turn hot pixels to black.

Create a new layer With this option, work will be performed on a new layer instead of the image. This will give you peace of mind!

11.3.18. Max RGB

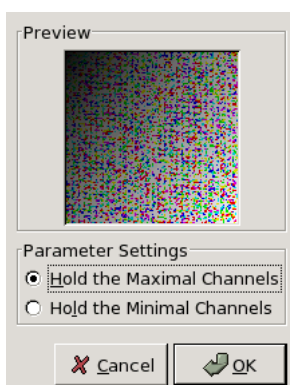
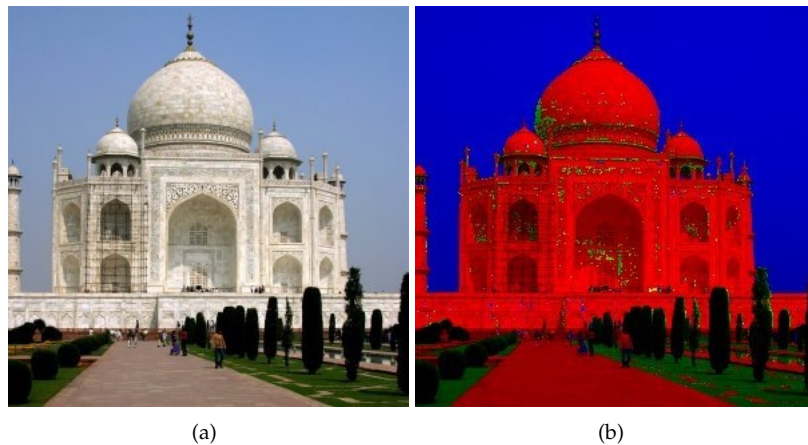


Figure 11.43. From left to right: original image, after applying MaxRGB filter



11.3.18.1. Overview

This filter is found in the image menu via **Filters** → **Colors** → **Max RGB**.

For every pixel of the image, this filter holds the channel with the maximal / minimal intensity.

11.3.18.2. Options

Preview This preview displays, in real time, the resulting image after treatment by filter.

Parameter Settings Hold the maximal channels: For every pixel, the filter keeps intensity of the RGB color channel which has the maximal intensity and reduces other both to zero. For example: 220, 158, 175 max→ 220, 0, 0. If two channels have same intensity, both are held: 210, 54, 210 max→ 210, 0, 210.

Hold the minimal channels: For every pixel, the filter keeps intensity of the RGB color channel which has the minimal intensity and reduce both others to zero. For example: 220, 158, 175 min→ 0, 158, 0. If two minimal channels have same intensity, both are held: 210, 54, 54 min→ 0, 54, 54.

Grey levels are not changed since light intensity is the same in all three channels.

11.3.19. Retinex

11.3.19.1. Overview

This filter is found in the image window menu under **Filters** → **Colors** → **Retinex**.

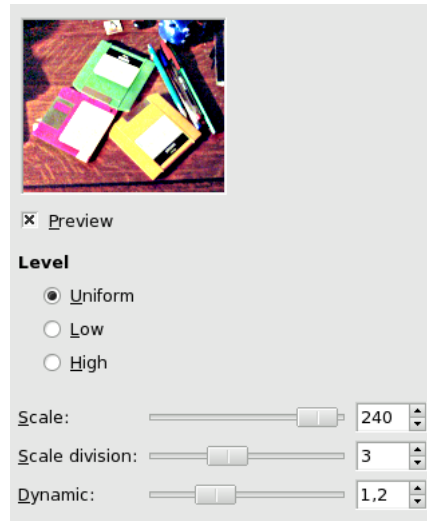
"Retinex" improves visual rendering of an image when lighting conditions are not good. While our eye can see colors correctly when light is low, cameras and video cams can't manage this well. The MSRCR (MultiScale Retinex with Color Restoration) algorithm, which is at the root of the "Retinex" filter, is inspired by the eye biological mechanisms to adapt itself to these conditions. "Retinex" stands for Retina + cortex.

Besides digital photography, Retinex algorithm is used to make the information in astronomical photos visible and detect, in medicine, poorly visible structures in X-rays or scanners.

11.3.19.2. Options

These options call for notions that only mathematicians can understand. In actual practice, user has to grope about for the best setting.

Level Here is what the plug-in author writes on his site (www-prima.inrialpes.fr/pelisson/MSRCR.php):
 "To characterize color variations and the lightor, we make a difference between (gaussian) filters

Figure 11.44. “Retinex” filter options

responses at different scales. These parameters allow to specify how to allocate scale values between min scale (sigma 2.0) and max (sigma equal to the image size)”...

- **Uniform:** FIXME
- **Low:** FIXME
- **High:** FIXME

Scale FIXME

Scale division FIXME

Dynamic As the MSR algorithm tends to make image lighter, this slider allows you to set color saturation.

Figure 11.45. “Retinex” example. Note new details in the upper right corner.

(a)

(b) Note new details in the upper right corner.

11.3.20. Semi-Flatten

11.3.20.1. Overview

This filter is found in the image menu via **Filters** → **Colors** → **Semi-Flatten**. It is available if your image holds an Alpha channel (Image>Layers/Transparency/Add an alpha channel). Otherwise, it is greyed out.

The Semi-flatten filter helps those in need of a solution to anti-aliasing indexed images with transparency. The GIF indexed format supports complete transparency (0 or 255 alpha value), but not semi-transparency (1 - 254): semi-transparent pixels will be transformed to no transparency or complete transparency, ruining anti-aliasing you applied to the logo you want to put onto your Web page.

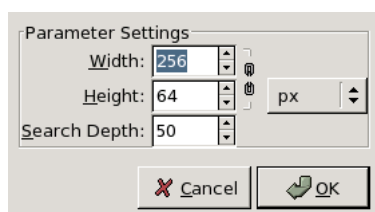
Before applying the filter, it's essential that you should know the background color of your Web page. Use the color-picker to determine the exact color. Click and drag this color from the Web page to the Toolbox ForeGround color. Invert FG/BG colors so that BG color is the same as Web background color.

Semi-flatten process will combine FG color to layer (logo) color, proportionally to corresponding alpha values, and will rebuild correct anti-aliasing. Completely transparent pixels will not take the color. Very transparent pixels will take a few color and weakly transparent will take much color.

11.3.20.2. Options

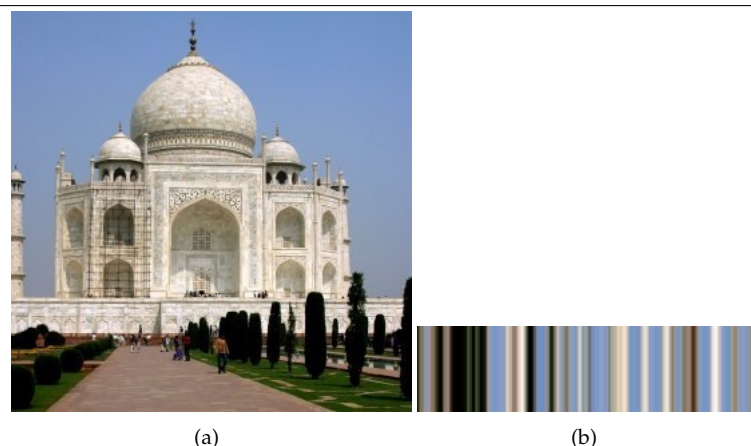
This filter has no options.

11.3.21. Smooth Palette



11.3.21.1. Overview

Figure 11.46. From left to right: original image, after applying Smooth Palette filter



This filter is found in the image menu via **Filters** → **Colors** → **Smooth Palette**.

It creates a striped palette from colors in active layer or selection. The main purpose of this filter is to create color-maps to be used with the **Flame** filter.

11.3.21.2. Options

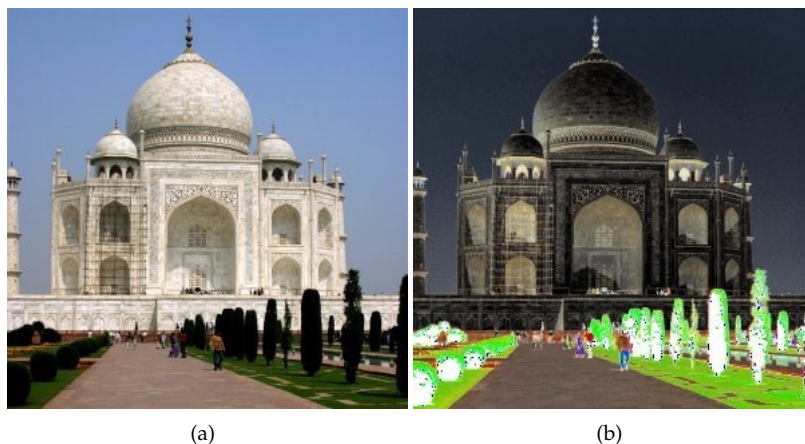
Parameter Settings You can set palette dimensions for **Width** and **Height**. Dimensions are linked when chain is not broken. You can also select unit.

Search Depth Increasing Search Depth (1 - 1024) will result in more shades in palette.

11.3.22. Value invert

11.3.22.1. Overview

Figure 11.47. From left to right: original image, after applying Value Invert filter



This filter is found in **Filters** → **Colors** → **Value Invert**

This filter inverts Value (luminosity) of the active layer or selection. Hue and Saturation will not be affected, although the color will sometimes be slightly different because of round-off error. If you want to invert Hue and Saturation also, use **Layers** → **Colors** → **Invert**.

Note that hue and saturation can be distorted quite a bit by this filter for colors with a high luminosity (for instance, HSV 102°, 100%, 98%, a bright green, gives HSV 96°, 100%, 2%) . Thus, you should not expect to be able to apply this filter twice in a row and get back the image you started with.

11.3.22.2. Options

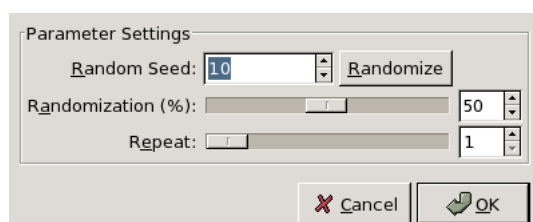
This filter has no options.

11.4. Noise filters

11.4.1. Noise filters introduction

Noise filters *add* noise to the image. To remove small defects from an image, see **Despeckle** filter.

11.4.2. Hurl



11.4.2.1. Overview

This filter is found in **Filters** → **Noise** → **Hurl**.

The Hurl filter changes each affected pixel to a random color, so it produces real *random noise*. All color channels, including an alpha channel (if it is present) are randomized. All possible values are assigned with the same probability. The original values are not taken into account. All or only some pixels in an active layer or selection are affected, the percentage of affected pixels is determined by the **Randomization (%)** option.

11.4.2.2. Options

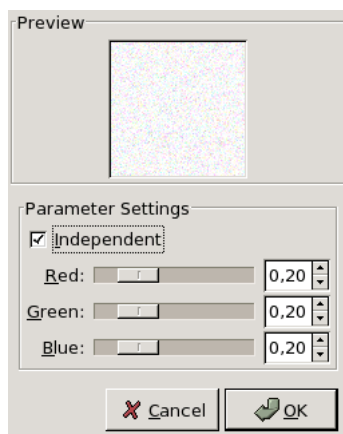
Random Seed **Random Seed** controls randomness of hurl. If the same random seed in the same situation is used, the filter produces exactly the same results. A different random seed produces different results. Random seed can be entered manually or generated randomly by pressing **New Seed** button.

When the **Randomize** option is checked, random seed cannot be entered manually, but is randomly generated each time the filter is run. If it is not checked, the filter remembers the last random seed used.

Randomization (%) The **Randomization** slider represents the percentage of pixels of the active layer or selection which will be hurled. The higher value, the more pixels are hurled.

Repeat The **Repeat** slider represents the number of times the filter will be applied. In the case of the Hurl filter it is not very useful, because the same results can be obtained faster just by using a higher **Randomization (%)** value.

11.4.3. Scatter RGB



11.4.3.1. Overview

This filter is found in the image window menu under **Filters** → **Noise** → **Scatter RGB**.

The Scatter RGB filter adds a normally distributed noise to a layer or a selection. It uses the RGB color model to produce the noise (noise is added to red, green and blue values of each pixel). A normal distribution means, that only slight noise is added to the most pixels in the affected area, while less pixels are affected by more extreme values. (If you apply this filter to an image filled with a solid grey color and then look at its histogram, you will see a classic bell-shaped Gaussian curve.)

The result is very naturally looking noise.

11.4.3.2. Options

Preview This preview displays interactively changes before they are applied to the image.

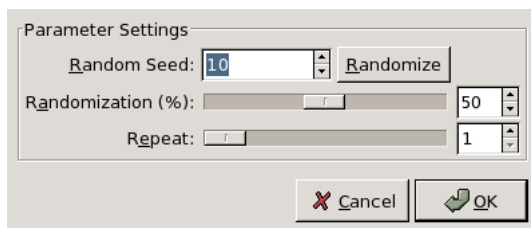
Correlated noise When checked, this radio button makes sliders R, G and B to move all together. The same relative noise will be added to all channels in each pixel, so the hue of pixels does not change much.

Independent RGB When this radio button is checked, you can move each RGB sliders separately.

Red, Blue, Green and Alfa Sliders These slidebars and adjacent input boxes allow to set noise level (0.00 - 1.00) in each channel. Alpha channel is only present, if your layer holds such a channel. In case of a grayscale image, a **Grey** is shown instead of color sliders.

The value set by these sliders actually determine the standard deviation of the normal distribution of applied noise. The used standard deviation is a half of the set value (where 1 is the distance between the lowest and highest possible value in a channel).

11.4.4. Pick



11.4.4.1. Overview

This filter is found in **Filters** → **Noise** → **Pick**.

The Pick filter replaces each affected pixel by a pixel value randomly chosen from its eight neighbours and itself (from a 3×3 square the pixel is center of). All or only some pixels in an active layer or selection are affected, the percentage of affected pixels is determined by the **Randomization (%)** option.

11.4.4.2. Options

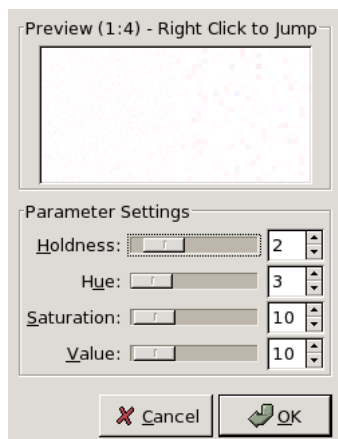
Random Seed **Random Seed** controls randomness of picking. If the same random seed in the same situation is used, the filter produces exactly the same results. A different random seed produces different results. Random seed can be entered manually or generated randomly by pressing **New Seed** button.

When the **Randomize** option is checked, random seed cannot be entered manually, but is randomly generated each time the filter is run. If it is not checked, the filter remembers the last random seed used.

Randomization (%) The **Randomization** slider represents the percentage of pixels of the active layer or selection which will be picked. The higher value, the more pixels are picked.

Repeat The **Repeat** slider represents the number of times the filter will be applied. Higher values result in more picking, pixel values being transfered farther away.

11.4.5. Scatter HSV



11.4.5.1. Overview

This filter is found in **Image > Filters/Noise/Scatter HSV**

The Scatter HSV filter creates noise in the active layer or selection by using the Hue, Saturation, Value (luminosity) color model.

11.4.5.2. Options

Preview This preview displays interactively changes before they are applied to the image.

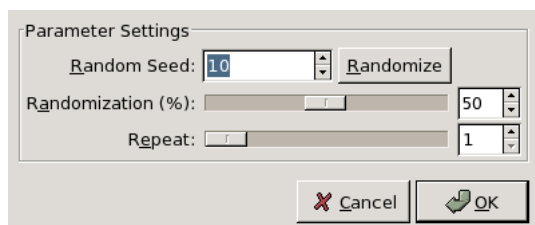
Holdness This slider (1 -8) controls how much the new pixel color value is allowed to be applied compared to the existing color. A low holdness will give an important hue variation. A high holdness will give a weak variation.

Hue slider This slider changes the color of the pixels in a random pattern. It selects an increasing available color range in the HSV color circle starting from the original pixel color.

Saturation Slider This slider increases saturation of scattered pixels.

Value Slider This slider increases brightness of scattered pixels.

11.4.6. Slur



11.4.6.1. Overview

This filter is found in **Filters → Noise → Slur**.

Slurring produces an effect resembling melting the image downwards; if a pixel is to be slurred, there is an 80% chance that it is replaced by the value of a pixel directly above it; otherwise, one of the two pixels to the left or right of the one above is used. All or only some pixels in an active layer or selection are affected, the percentage of affected pixels is determined by the **Randomization (%)** option.

11.4.6.2. Options

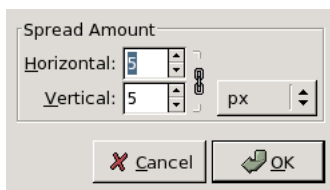
Random Seed **Random Seed** controls randomness of slurring. If the same random seed in the same situation is used, the filter produces exactly the same results. A different random seed produces different results. Random seed can be entered manually or generated randomly by pressing **New Seed** button.

When the **Randomize** option is checked, random seed cannot be entered manually, but is randomly generated each time the filter is run. If it is not checked, the filter remembers the last random seed used.

Randomization (%) The **Randomization** slider represents the percentage of pixels of the active layer or selection which will be slurred. The higher value, the more pixels are slurred, but because of the way the filter works, its effect is most noticeable if this slider is set to a medium value, somewhere around 50. Experiment with it and try for yourself!

Repeat The **Repeat** slider represents the number of times the filter will be applied. Higher values result in more slurring, moving the color over a longer distance.

11.4.7. Spread



11.4.7.1. Overview

This filter is found in **Filters** → **Noise** → **Spread**.

The Spread filter swaps each pixel in the active layer or selection with another randomly chosen pixel by a user specified amount. It works on color transitions, not on plain color areas. No new color is introduced.

11.4.7.2. Options

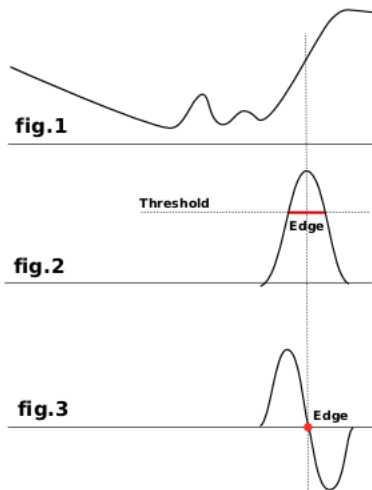
Preview This preview displays interactively changes before they are applied to the image.

Spread amount You can set the distance that pixels will be moved along **Horizontal** and **Vertical** axis. The axis can be locked by clicking the Chain icon. You can also define the Unit to be used.

11.5. Edge-detect filters

11.5.1. Edge-detect introduction

Edge detect filters search for borders between different colors and so can detect contours of objects. They are used to make selections and for many artistic purposes.



Most of them are based on gradient calculation methods and give thick border lines. Look at fig.1 which represents color intensity variations. On the left is a slow color gradient which is not a border. On the right is a quick variation which is an edge. Now, let us calculate the gradient, the variation speed, of this edge, i.e the first derivative (fig.2). We have to decide that a border is detected when gradient is more than a threshold value (the exact border is at top of the curve, but this top varies according to borders). In most cases, threshold is under top and border is thick.

The Laplacian edge detection uses the second derivative (fig.3). The top of the curve is now at zero and clearly identified. That's why Laplace filter renders a thin border, only a pixel wide. But this derivative gives several zeros corresponding to small ripples, resulting in false edges.

Some blurring before applying edge filters is often necessary: it flattens small ripples in signal and so prevents false edges.

11.5.2. Difference of Gaussians



11.5.2.1. Overview

This filter is located at **Filters** → **Edge detect** → **Difference of Gaussians**

This filter is new in GIMP 2.2. It does edge detection using the so-called "Difference of Gaussians" algorithm, which works by performing two different Gaussian blurs on the image, with a different blurring radius for each, and subtracting them to yield the result. This algorithm is very widely used in artificial vision (maybe in biological vision as well!), and is pretty fast because there are very efficient methods for doing Gaussian blurs. The most important parameters are the blurring radii for the two Gaussian blurs. It is probably easiest to set them using the preview, but it may help to know that increasing the smaller radius tends to give thicker-appearing edges, and decreasing the larger radius tends to increase the "threshold" for recognizing something as an edge. In most cases you will get nicer results if Radius 2 is smaller than Radius 1, but nothing prevents you from reversing them, and in

situations where you have a light figure on the dark background, reversing them may actually improve the result.

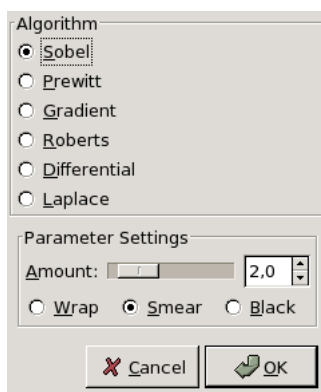
11.5.2.2. Options

Smoothing parameters Radius 1 and Radius 2 are the blurring radii for the two Gaussian blurs. The only constraints on them is that they cannot be equal, or else the result will be a blank image. If you want to produce something that looks like a sketch, in most cases setting Radius 2 smaller than Radius 1 will give better results.

Normalize Checking this box causes the brightness range in the result to be stretched as much as possible. Note that in the preview, only the part of the image that is shown is taken into account, so with "Normalize" checked the preview is not completely accurate. (It is accurate except in terms of global contrast, though.)

Invert Checking this box inverts the result, so that you see dark edges on a white background, giving something that looks more like a drawing.

11.5.3. Edge



11.5.3.1. Overview

This filter is found in **Image>/Filters/Edge-Detect/Edge**

11.5.3.2. Options

Algorithm Edge detector offers several detection methods:

- **Sobel:** Here, this method has no options and so is less interesting than the specific Sobel.
- **Prewitt:** Result doesn't look different from Sobel.
- **Gradient:** Edges are thinner, less contrasted and more blurred than Sobel.
- **Roberts:** No evident difference from Sobel.
- **Differential:** Edges less bright.
- **Laplace:** Less interesting than the specific one.

Parameter Settings Amount: a low value results in black, high-contrasted image with thin edges. A high value results in thick edges with low contrast and many colors in dark areas.

Wrap, Smear, Black: is the Wrapmode like "Displace" plug-in. It's useful for tileable image.

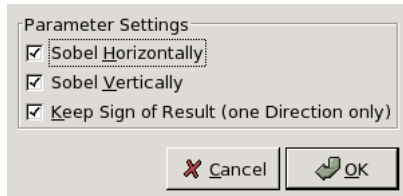
11.5.4. Laplace

11.5.4.1. Overview

This filter is found in **Filtres** → **Edge detect** → **Laplace**.

This filter detects edges in the image using Laplacian method, which produces thin, pixel wide borders.

11.5.5. Sobel



11.5.5.1. Overview

This filter is found in **Filters** → **Edge detect** → **Sobel**.

Sobel's filter detects horizontal and vertical edges separately on a grey-level image. Color images are turned into grey-levels.

11.5.5.2. Options

Parameters Settings

- **Sobel Horizontally:** Renders near horizontal edges.
- **Sobel Vertically:** Renders near vertical edges.
- **Keep sign of result:** This option works when only one direction is selected: it gives a flat relief with bumps and hollows to the image.

11.6. Enhance filters

11.6.1. Enhance filters introduction

Enhance filters are used to compensate for image imperfections. Such imperfections include dust particles, noise, interlaced frames (coming usually from a TV frame-grabber) and insufficient sharpness.

11.6.2. Deinterlace



11.6.2.1. Overview

This filter is found in **Image**>**Filters/Enhance/Deinterlace**

Images captured by videocards, especially when fast movement is recorded, may look blurred and stripped, with splitted objects. This is due to how cameras work. They don't record 25 images per second, but 50, with half vertical resolution. There are two interlaced images in one frame. First line of first image is followed by first line of second image followed by second line of first image... etc. So, if there have been an important move between the two images, objects will appear splitted, shifted, stripped.

The Deinterlace filter keeps only one of both images and replaces missing lines by a gradient between previous and following lines. The resulting image, or selection, will be somewhat blurred, but can be improved by enhance filters

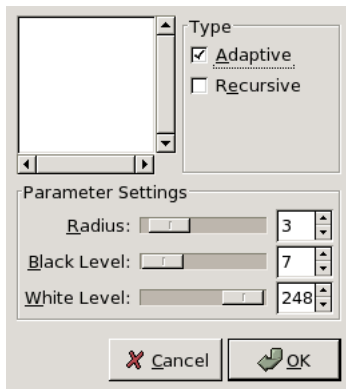
A test image can be found at www.alparysoft.com <<http://www.alparysoft.com>>

11.6.2.2. Options

Preview When **Do preview** is checked, parameter setting results are interactively displayed in preview.

Mode **Keep odd lines** and **Keep even lines**: One of them may render a better result. You must try both.

11.6.3. Despeckle



11.6.3.1. Overview

This filter is found in **Image>Filters/Enhance/Despeckle**

It is used to remove small defects due to dust, or scratches, on a scanned image, and also moiré effect on image scanned from a magazine. You ought to select isolated defects before applying filter.

11.6.3.2. Options

Preview Parameter setting results are interactively displayed in preview.

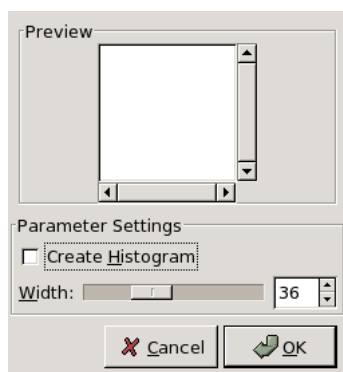
Type

- **Adaptive**: Adapts radius to image or selection content (using Histogram). If this option is checked, radius slider is not efficient. It renders a result smoother than with radius alone.
- **Recursive**: Repeats filter action which gets stronger.

Parameters settings

- **Radius**: Sets size of action window from 1 (3x3 pixels) to 20 (41x41). This window moves over the image, and the color in it is smoothed, so imperfections are removed.
- **Black level**: Removes pixels darker than set value (0-255).
- **White level**: Removes pixels whiter than set value (0-255).

11.6.4. Destripe



11.6.4.1. Overview

This filter is found in **Image>Filters/Enhance/Destripe...**

It is used to remove vertical stripes caused by poor quality scanners. It works by adding a pattern that will interfere with the image, removing stripes if setting is good. This "negative" pattern is calculated from vertical elements of the image, so don't be surprised if you see stripes on the preview of an image that has none. And if pattern "strength" is too high, your image will be striped.

If, after a first pass, a stripe persists, rectangular-select it and apply filter again (all other selection type may worsen the result).

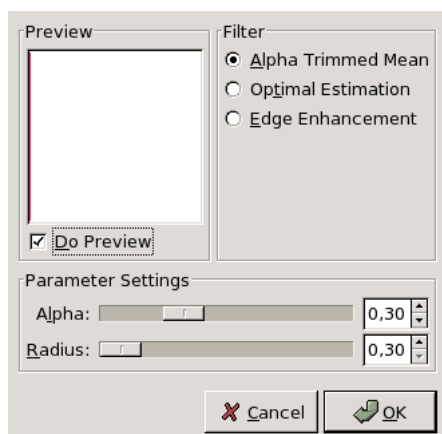
11.6.4.2. Options

Preview Parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Parameter setting

- **Create histogram:** This "histogram" is a black and white image showing the interference pattern more legibly.
- **Width:** Slider and input box allow to set "strength" of filter (2-100): more than 60 is rarely necessary and may create artifacts.

11.6.5. NL Filter



11.6.5.1. Overview

This filter is found in **Filters** → **Enhance** → **NL Filter**. NL means "Non Linear". Derived from the Unix `pnmnlfilt` program, it joins smoothing, despeckle and sharpen enhancement functions. It works on the whole image, not on the selection.

This is something of a swiss army knife filter. It has 3 distinct operating modes. In all of the modes each pixel in the image is examined and processed according to it and its surrounding pixels values. Rather than using the 9 pixels in a 3x3 block, 7 hexagonal area samples are taken, the size of the hexagons being controlled by the radius parameter. A radius value of 0.3333 means that the 7 hexagons exactly fit into the center pixel (ie. there will be no filtering effect). A radius value of 1.0 means that the 7 hexagons exactly fit a 3x3 pixel array.

Il a quelque chose d'un couteau suisse, avec trois modes opératoires distincts. Dans tous les modes, chaque pixel de l'image est traité en fonction de sa valeur et de celle des pixels environnants. Plutôt que d'utiliser un bloc de 3x3 pixels, il prélève 7 échantillons hexagonaux, la taille des hexagones étant réglable grâce au paramètre Rayon. Un rayon de 0.3333 signifie que les 7 hexagones sont centrés exactement sur le pixel central et qu'il n'y aura pas de filtrage. Un rayon de 1.0 signifie que les 7 hexagones tiennent dans un tableau de 3x3 pixels.

11.6.5.2. Options

Preview When **Do preview** is checked, parameter setting results are interactively displayed in preview.

Parameter settings

- **Alpha:** Meaning of this value depends on the selected option.
- **Radius:** Controls the strength of the filter (0.33-1.00).

11.6.5.3. Operating Modes

This filter can perform several distinct functions, depending on the value of the parameter *alpha*.

Alpha trimmed mean filter. ($0.0 \leq \alpha \leq 0.5$) The value of the center pixel will be replaced by the mean of the 7 hexagon values, but the 7 values are sorted by size and the top and bottom *alpha* portion of the 7 are excluded from the mean. This implies that an *alpha* value of 0.0 gives the same sort of output as a normal convolution (ie. averaging or smoothing filter), where *radius* will determine the "strength" of the filter. A good value to start from for subtle filtering is *alpha* = 0.0, *radius* = 0.55. For a more blatant effect, try *alpha* 0.0 and *radius* 1.0.

An *alpha* value of 0.5 will cause the median value of the 7 hexagons to be used to replace the center pixel value. This sort of filter is good for eliminating "pop" or single pixel noise from an image without spreading the noise out or smudging features on the image. Judicious use of the *radius* parameter will fine tune the filtering. Intermediate values of *alpha* give effects somewhere between smoothing and "pop" noise reduction. For subtle filtering try starting with values of *alpha* = 0.4, *radius* = 0.6. For a more blatant effect try *alpha* = 0.5, *radius* = 1.0.

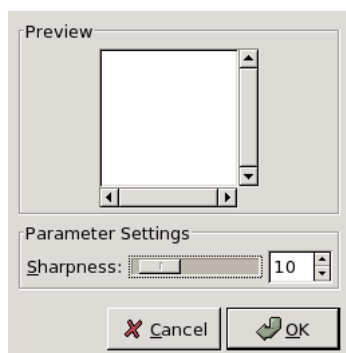
Optimal estimation smoothing. ($1.0 \leq \alpha \leq 2.0$) This type of filter applies a smoothing filter adaptively over the image. For each pixel the variance of the surrounding hexagon values is calculated, and the amount of smoothing is made inversely proportional to it. The idea is that if the variance is small then it is due to noise in the image, while if the variance is large, it is because of "wanted" image features. As usual the *radius* parameter controls the effective radius, but it probably advisable to leave the radius between 0.8 and 1.0 for the variance calculation to be meaningful. The *alpha* parameter sets the noise threshold, over which less smoothing will be done. This means that small values of *alpha* will give the most subtle filtering effect, while large values will tend to smooth all parts of the image. You could start with values like `alpha = 1.2`, `radius = 1.0`, and try increasing or decreasing the *alpha* parameter to get the desired effect. This type of filter is best for filtering out dithering noise in both bitmap and color images.

Edge enhancement. ($-0.1 \geq \alpha \geq -0.9$) This is the opposite type of filter to the smoothing filter. It enhances edges. The *alpha* parameter controls the amount of edge enhancement, from subtle (-0.1) to blatant (-0.9). The *radius* parameter controls the effective radius as usual, but useful values are between 0.5 and 0.9. Try starting with values of `alpha = 0.3` , `radius = 0.8` .

Combination use The various operating modes can be used one after the other to get the desired result. For instance to turn a monochrome dithered image into grayscale image you could try one or two passes of the smoothing filter, followed by a pass of the optimal estimation filter, then some subtle edge enhancement. Note that using edge enhancement is only likely to be useful after one of the non-linear filters (alpha trimmed mean or optimal estimation filter), as edge enhancement is the direct opposite of smoothing.

For reducing color quantization noise in images (ie. turning .gif files back into 24 bit files) you could try a pass of the optimal estimation filter (*alpha* 1.2, *radius* 1.0), a pass of the median filter (*alpha* 0.5, *radius* 0.55), and possibly a pass of the edge enhancement filter. Several passes of the optimal estimation filter with declining *alpha* values are more effective than a single pass with a large *alpha* value. As usual, there is a tradeoff between filtering effectiveness and losing detail. Experimentation is encouraged.

11.6.6. Sharpen



11.6.6.1. Overview

This filter is found in **Image>Filters/Enhance/Sharpen**

Most of digitized images need correction of sharpness. This is due to digitizing process that must chop a color continuum up in points with slightly different colors: elements thinner than sampling frequency will be averaged into an uniform color. So sharp borders are rendered a little blurred. The same phenomenon appears when printing color dots on paper.

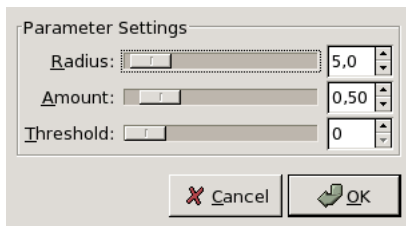
The Sharpen filter accentuates edges but also any noise or blemish and it may create noise in graduated color areas like the sky or a water surface. It competes with the Unsharp Mask filter, which is more sophisticated and renders more natural results.

11.6.6.2. Options

Preview Parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Parameter setting Increase sharpness: slider and input boxes allow you to set sharpness (1-99) and you can judge result in preview. By increasing sharpness, you may increase image blemishes and also create noise in graduated color areas.

11.6.7. Unsharp Mask



11.6.7.1. Overview

This filter is found in **Image>Filters/Enhance/Unsharp Mask**

Out-of-focus photographs and most digitized images often need a sharpness correction. This is due to the digitizing process that must chop a color continuum up in points with slightly different colors: elements thinner than sampling frequency will be averaged into an uniform color. So sharp borders are rendered a little blurred. The same phenomenon appears when printing color dots on paper.

The Unsharp Mask filter (what an odd name!) sharpens edges of the elements without increasing noise or blemish. It is the king of the sharpen filters.

Some scanners apply a sharpen filter while scanning. It's worth disabling it so that you keep control on your image.

11.6.7.2. Options

Preview Parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Parameters setting

- **Radius:** slider and input boxes (0.1-120) allow you to set how many pixels on either side of an edge will be affected by sharpening. High resolution images allow higher radius. It is better to always sharpen an image at its final resolution.
- **Amount:** slider and input boxes (0.00-5.00) allow you to set strength of sharpening.
- **Threshold:** slider and input boxes (0-255) allow you to set the minimum difference in pixel values that indicates an edge where sharpen must be applied. So you can protect areas of smooth tonal transition from sharpening, and avoid creation of blemishes in face, sky or water surface.

11.6.7.3. More information

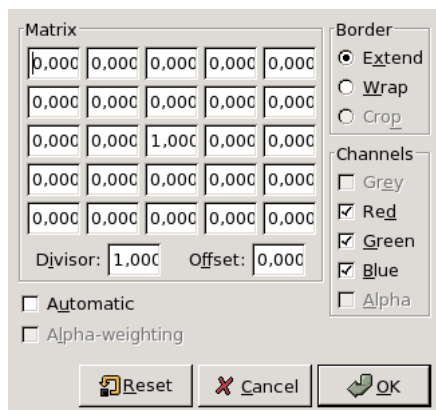
To prevent color distortion while sharpening, Decompose your image to HSV and work only on Value. Then Compose the image to HSV. Go to Image/Mode and click on Decompose. Make sure the "Decompose to Layers" box is checked. Choose HSV and click OK. You will get a new grey-level image with three layers, one for Hue, one for Saturation, and one for Value. (Close the original image so you won't get confused). Select the Value layer and apply your sharpening to it. When you are done, with that same layer selected, reverse the process. Go to Image/Mode and click on Compose. Again choose HSV and click OK. You will get back your original image except that it will have been sharpened in the Value component

11.7. Generic filters

11.7.1. Generic filters introduction

Generic filters are filters you can build your own filters with. That looks complicated? See [Convolution Matrix](#) filter and you will understand better.

11.7.2. Convolution matrix



11.7.2.1. Overview

You can find this filter via the image menu under **Filters** → **Generic** → **Convolution Matrix**

Here is a mathematician's domain. Most of filters are using convolution matrix. With the Convolution Matrix filter, if the fancy takes you, you can build a custom filter.

What is a convolution matrix? It's possible to get a rough idea of it without using mathematical tools that only a few ones know. Convolution is the treatment of a matrix by another one which is called "kernel".

The Convolution Matrix filter uses a first matrix which is the Image to be treated. The image is a bi-dimensional collection of pixels in rectangular coordinates. The used kernel depends on the effect you want.

GIMP uses 5x5 or 3x3 matrices. We will consider only 3x3 matrices, they are the most used and they are enough for all effects you want. If all border values of a kernel are set to zero, then system will consider it as a 3x3 matrix.

The filter studies successively every pixel of the image. For each of them, which we will call the "initial pixel", it multiplies the value of this pixel and values of the 8 surrounding pixels by the kernel corresponding value. Then it adds the results, and the initial pixel is set to this final result value.

A simple example:

$$\begin{array}{|c|c|c|c|c|} \hline 100 & 100 & 100 & 100 & 100 \\ \hline 100 & 100 & 50 & 50 & 100 \\ \hline 100 & 100 & 100 & 100 & 100 \\ \hline 100 & 100 & 100 & 100 & 100 \\ \hline 100 & 100 & 100 & 100 & 100 \\ \hline \end{array} \times \begin{array}{|c|c|c|} \hline 0 & 1 & 0 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \\ \hline \end{array} = \begin{array}{|c|c|c|c|c|} \hline 100 & 100 & 100 & 100 & 100 \\ \hline 100 & 100 & 50 & 50 & 100 \\ \hline 100 & 100 & 50 & 100 & 100 \\ \hline 100 & 100 & 100 & 100 & 100 \\ \hline 100 & 100 & 100 & 100 & 100 \\ \hline \end{array}$$

On the left is the image matrix: each pixel is marked with its value. The initial pixel has a red border. The kernel action area has a green border. In the middle is the kernel and, on the right is the convolution result.

Here is what happened: the filter read successively, from left to right and from top to bottom, all the pixels of the kernel action area. It multiplied the value of each of them by the kernel corresponding value and added results: $(100*0) + (50*1) + (50*0) + (100*0) + (100*0) + (100*0) + (100*0) + (100*0) + (100*0) = 50$. The initial pixel took the value 50. Previously, when the initial pixel had value=50, it took the value 100 of the above pixel (the filter doesn't work on the image but on a copy) and so disappeared into the "100" background pixels. As a graphical result, the initial pixel moved a pixel downwards.

11.7.2.2. Options

Matrix This is the 5x5 kernel matrix: you enter wanted values directly into boxes.

Divisor: The result of previous calculation will be divided by this divisor. You will hardly use 1, that lets result unchanged, and 9 or 25 according to matrix size, that gives the average of pixel values.

Offset: this value is added to the division result. This is useful if result may be negative. This offset may be negative.

**Border**

Source Extend, Wrap, Crop

When the initial pixel is on a border, a part of kernel is out of image. You have to decide what filter must do:

- **Extend:** this part of kernel is not taken into account.
- **Wrap:** this part of kernel will study pixels of the opposite border, so pixels disappearing from one side reappear on the other side.
- **Crop:** Pixels on borders are not modified, but they are cropped.

Channels You can select there one or several channels the filter will work with.

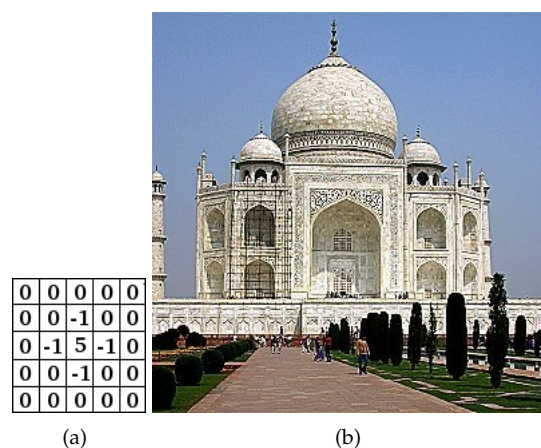
Automatic If this option is checked, The Divisor takes the result value of convolution. If this result is equal to zero (it's not possible to divide by zero), then a 128 offset is applied. If it is negative (a negative color is not possible), a 255 offset is applied (inverts result).

Alpha weighting If this option is not checked, the filter doesn't take in account transparency and this may be cause of some artefacts when blurring.

11.7.2.3. Examples

Design of kernels is based on high levels mathematics. You can find ready-made kernels on the Web. Here are a few examples:

Figure 11.48. Sharpen

**11.7.3. Dilate****11.7.3.1. Overview**

This filter is found in **Filters** → **Generic** → **Dilate**

Figure 11.49. Blur

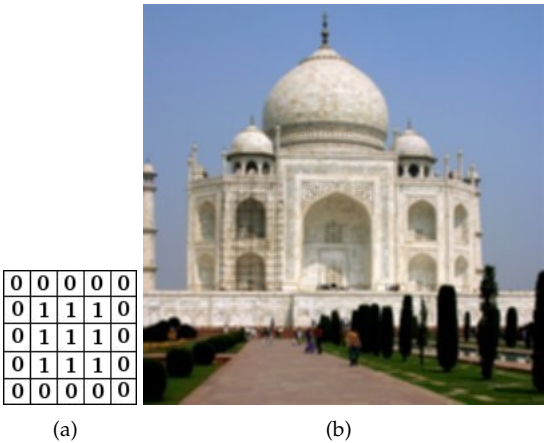
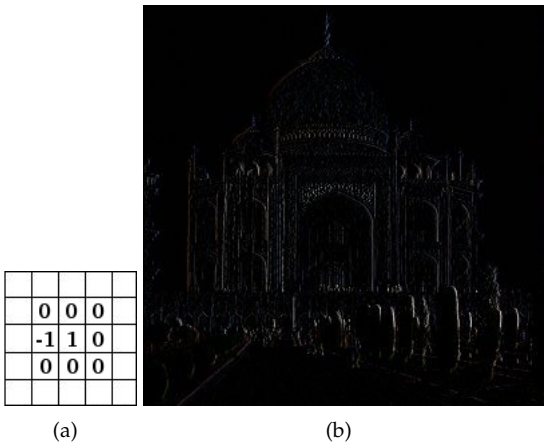
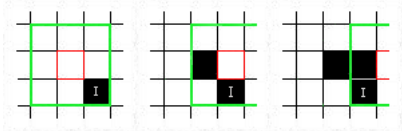


Figure 11.50. Edge enhance



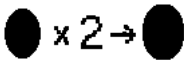
This filter widens and enhances dark areas of the active layer or selection.

For every image pixel, it brings the pixel Value (luminosity) into line with the lowest Value (the darkest) of the 8 neighbouring pixels (3x3 matrix). So, a dark pixel is added around dark areas. An isolated pixel on a brighter background will be changed to a big "pixel", composed of 9 pixels, and that will create some noise in the image.



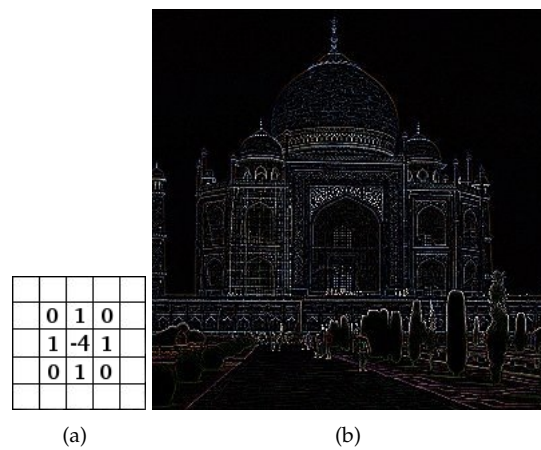
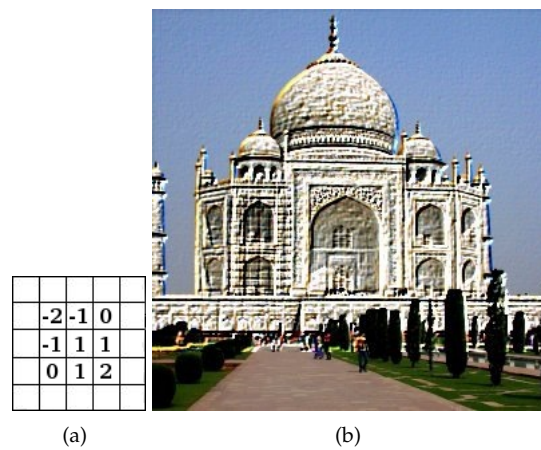
In this image, the studied pixel has a red border and the studied matrix has a green border. I hope you have understood how to go on with the process and get a 3x3 pixel block: when the "I" pixel is inside the green border, the studied pixel turns to black.

A larger dark area will dilate by one pixel in all directions:



The filter was applied 3 times.

On more complex images, dark areas are widened and enhanced the same, and somewhat pixellated. Here, the filter was applied 3 times:

Figure 11.51. Edge detect**Figure 11.52.** Emboss

Of course, if background is darker than foreground, it will cover the whole image.

11.7.3.2. Options

This filter has no options.

11.7.3.3. Examples

Figure 11.53. Dilate text

E E

Figure 11.54. Dilate neon effect**Figure 11.55.** Erode noise

11.7.4. Erode

11.7.4.1. Overview

This filter is found in **Filters** → **Generic** → **Erode**

This filter widens and enhances bright areas of the active layer or selection.

For every image pixel, it brings the pixel Value (luminosity) into line with the upper Value (the brightest) of the 8 neighbouring pixels (3x3 matrix). So, a bright pixel is added around bright areas. An isolated pixel on a darker background will be changed to a big "pixel", composed of 9 pixels, and that will create some noise in the image. A larger bright area will dilate by one pixel in all directions.

On more complex images, bright areas are widened and enhanced the same, and somewhat pixellated.

11.7.4.2. Options

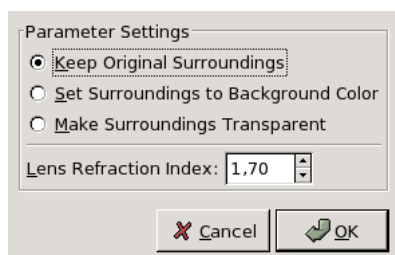
This filter has no option.

11.8. Glass Effects filters

11.8.1. Glass Effects filters introduction

Glass Effects filters result in an image as if it were seen through a lens or glass tiles.

11.8.2. Apply Lens



11.8.2.1. Overview

You can find this filter via the image menu under **Filters** → **Glass effects** → **Apply Lens**

After applying this filter, a part of the image is rendered as through a spherical lens.

11.8.2.2. Options

Preview Parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Parameter settings • **Keep original surrounding:** The lens seems to be put on the image.

Figure 11.56. The same image, before and after applying lens effect.

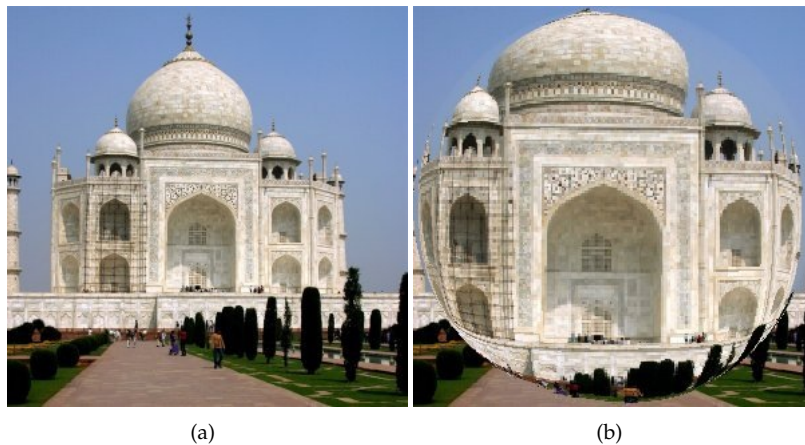
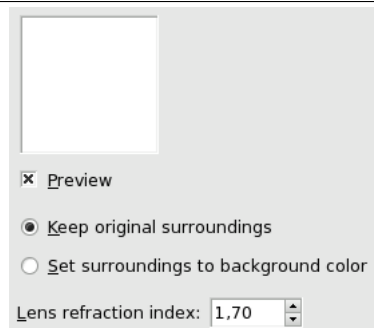
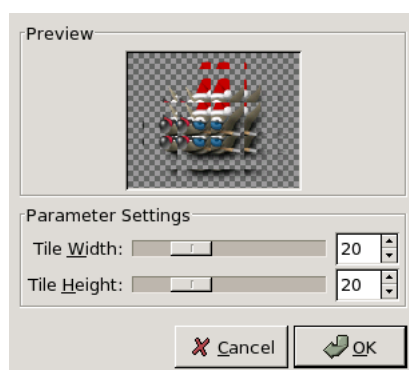


Figure 11.57. “Apply Lens” filter options



- **Set surroundings to Background color:** The part of the image outside the lens will have the Background color selected in Toolbox. This can be a transparent background.
- **Lens Refraction Index:** Lens will be more or less convergent (1-100).

11.8.3. Glass Tile



11.8.3.1. Overview

You can find this filter via the image menu under **Filters** → **Glass effects** → **Glass Tile**

After applying this filter, the active layer or selection is rendered as through a glass brick wall.

11.8.3.2. Options

Figure 11.58. The same image, before and after applying lens effect.

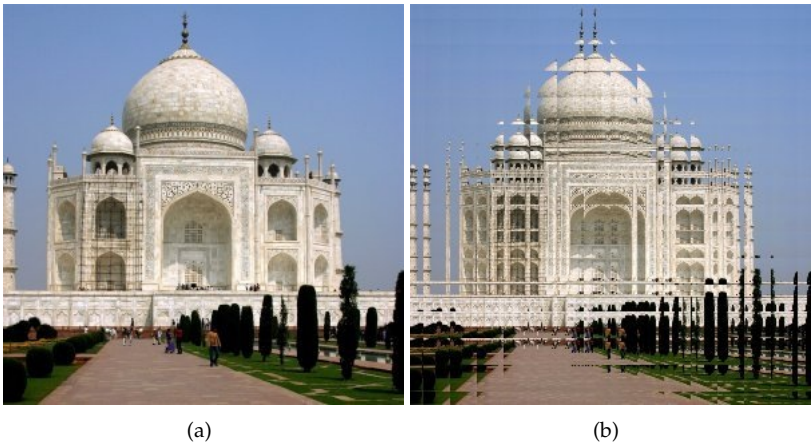
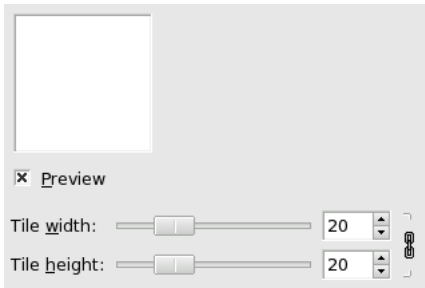


Figure 11.59. “Glass Tile” filter options



Preview Parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

- Parameters setting**
- **Tile width:** Sets tile width (10-50 pixels).
 - **Tile length:** Sets tile length (10-50 pixels).

11.9. Light Effects filters

11.9.1. Light Effects filters introduction

Light Effects filters render several illumination effects of the image.

11.9.2. FlareFX



11.9.2.1. Overview

This filter is found in **Filters** → **Light Effectsender** → **FlareFX**

This filter gives the impression that sun hit the objective when taking a shot. You can locate the reflection with a reticule you can move, but you have not the possibilities that Gflare filter offers.

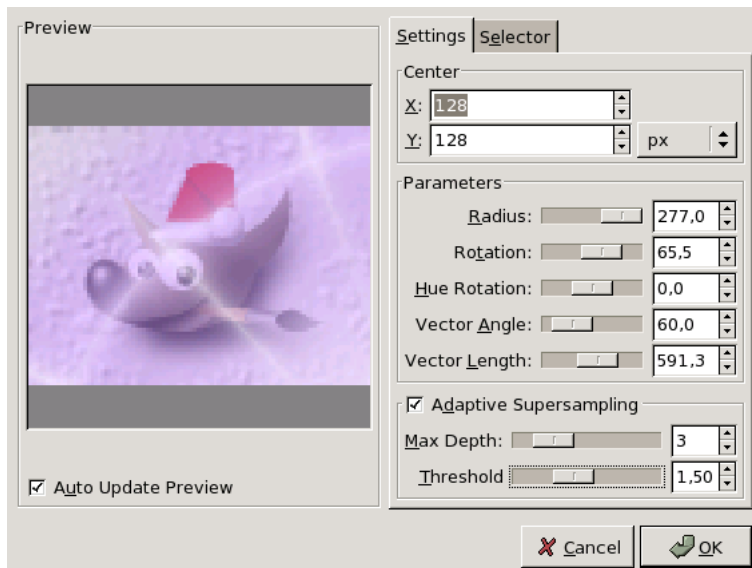
11.9.2.2. Options

Preview Parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Parameters setting

- **Center of FlareFX:** You can set there X and Y (pixels) coordinates of glint. The coordinate origin is at upper left corner.
- **Show cursor:** When this option is checked, a reticule appears in preview and you can move it with mouse pointer to locate center of flareX.

11.9.3. Gflare



11.9.3.1. Overview

This filter is found in **Filters** → **Light Effectsender** → **Gflare**

Gflare effect reminds the effect you get when you take a photograph of a blinding light source, with a halo and radiations around the source. The Gflare image has three components: *Glow* which is the big central fireball, *Rays* and *Second Flares*

11.9.3.2. Options

The Settings tab allows you to set manually the parameters while the Selector tab let you choose presets in a list.

Preview When **Auto Update Preview** is checked, parameter setting results are interactively displayed in preview without modifying the image until you click on **OK** button.

11.9.3.3. Settings

Center Center: You can set there X and Y (pixels) coordinates of glint. The coordinate origin is at upper left corner

Parameters

- **Radius:** The radius of the effect. Don't be afraid to use the box with the digits instead the slider which is a bit limited.
- **Rotation:** Turn the effect.
- **Hue Rotation:** Change the tint (color) of the effect.
- **Vector Angle:** Turn the Second flares.
- **Vector length:** Vary the distance applied for the Second flares.

Adaptive Supersampling Adaptive Supesampling: Settings of the anti-aliasing following parameters like Depth and Threshold.

11.9.3.4. Selector

The Selector tab allows you to select a Gflare pattern, to change it and save it.

New When you click on this button, you create a new Gflare pattern. Give it a name of your choice.

Edit This button brings up the Gflare Editor (see below).

Copy This button allows you to duplicate selected Gflare pattern. You can edit the copy without altering the original.

Delete This button deletes the selected Gflare pattern.

11.9.3.5. Gflare Editor

General

Glow Paint Options

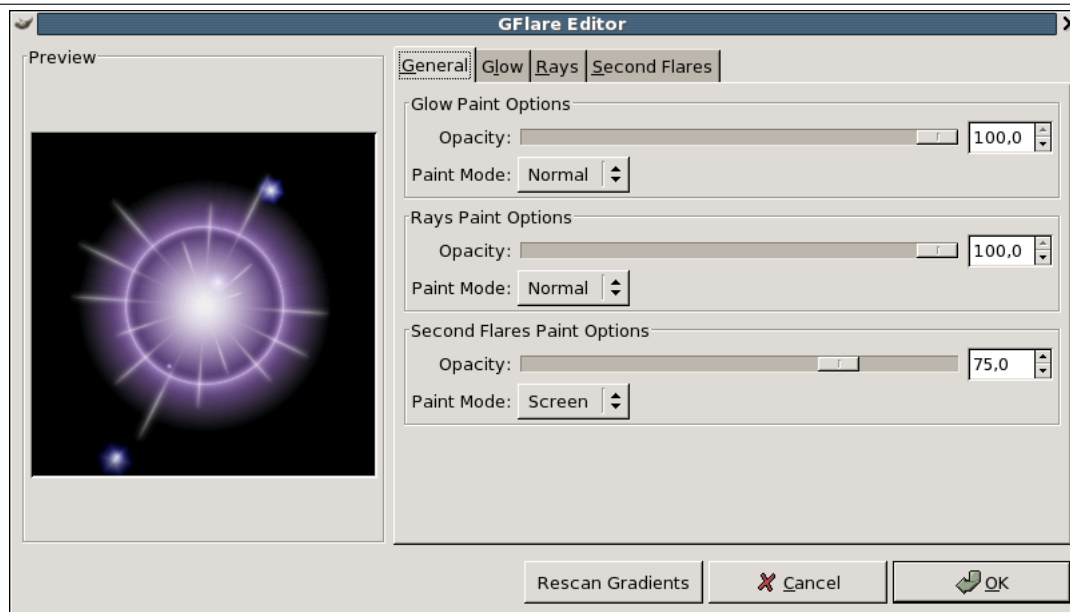
- **Opacity:** Slider and input box allows you to reduce glow opacity (0-100).
- **Paint Mode:** You can choose between four modes:
 - *Normal:* In this mode, the glow covers the image without taking into account what is beneath.
 - *Addition:* Pixel RGB values of glow are added to RGB values of the corresponding pixels in the image. Colors get lighter and white areas may appear.
 - *Overlay:* Light/Dark areas of glow enhance corresponding light/dark areas of image.
 - *Screen:* Dark areas of image are enlightened by corresponding light areas of glow. Imaging two slides projected onto the same screen.

Rays Paint Options Options are the same as for "Glow".

Second Flare Paint Options Options are the same as for "Glow".

Glow

Figure 11.60.



Gradients By clicking on the rectangular buttons, you can develop a long list of gradients. “%” gradients belong to the Editor.

- **Radial gradient:** The selected gradient is drawn radially, from center to edge.
- **Angular gradient:** The selected gradient develops around center, counter-clockwise, starting from three o’clock if “Rotation” parameter is set to 0. Radial and angular gradients are combined according to the Multiply mode: light areas are enhanced and colors are mixed according to CMYK color system (that of your printer).
- **Angular size gradient:** This is a gradient of radius size which develops angularly. Radius is controlled according to gradient Luminosity: if luminosity is zero (black), the radius is 0%. If luminosity is 100% (white), the radius is also 100%.

Parameters

- **Size (%):** Sets size (%) of glow (0-200).
- **Rotation:** Sets the origin of the angular gradient (-180 +180).
- **Hue rotation:** Sets glow color, according to the HSV color circle (-180 +180).

Rays

Gradients The options are the same as for Glow.

Parameters The first three options are the same as in Glow. Two are new:

- **# of spikes:** This option determines the number of spikes (1-300) but also their texture.
- **Spike Thickness:** When spikes get wider (1-100), they look like flower petals

Second Flares

Gradients The options are the same as for Glow.

Parameters Options are the same as in Glow.

Shape of Second Flares Second flares, these satellites of the main flare, may have two shapes: *Circle* and *Polygon*. You can set the *Number* polygon sides. The option accepts 1 side (!), not 2.

Random seed and Randomize

- **Random Seed:** The random generator will use this value as a seed to generate random numbers. You can use the same value to repeat the same "random" sequence several times.
- **Randomize:** When you click on this button, you produce a random seed that will be used by the random generator. It is each time different.

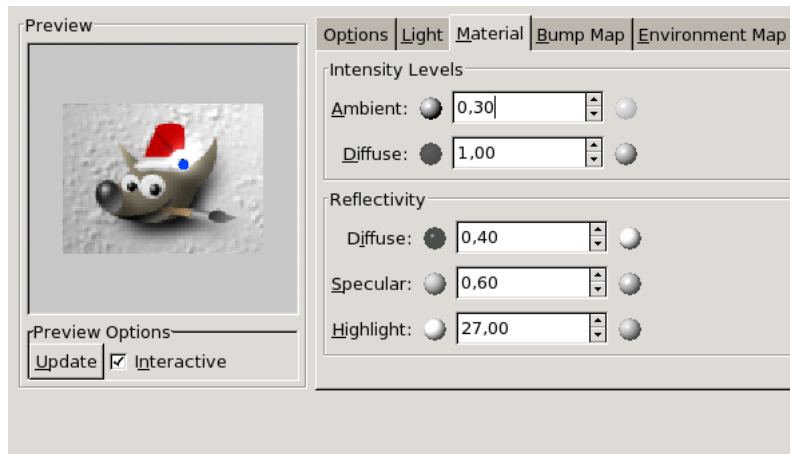
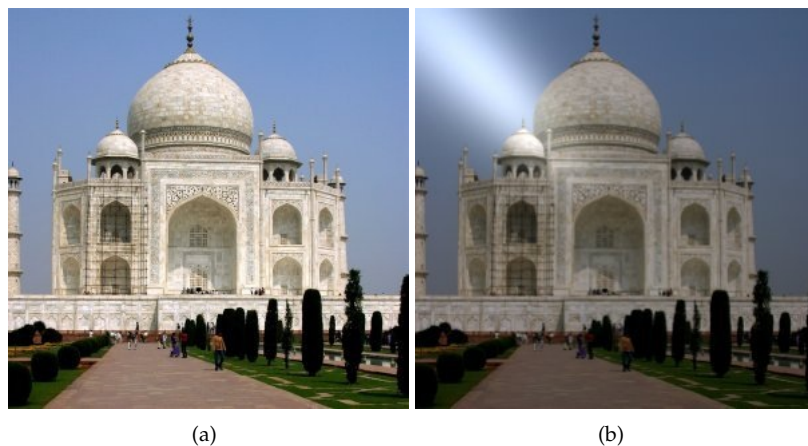
11.9.4. Lighting Effects**11.9.4.1. Overview**

Figure 11.61. The same image, before and after applying Lighting filter



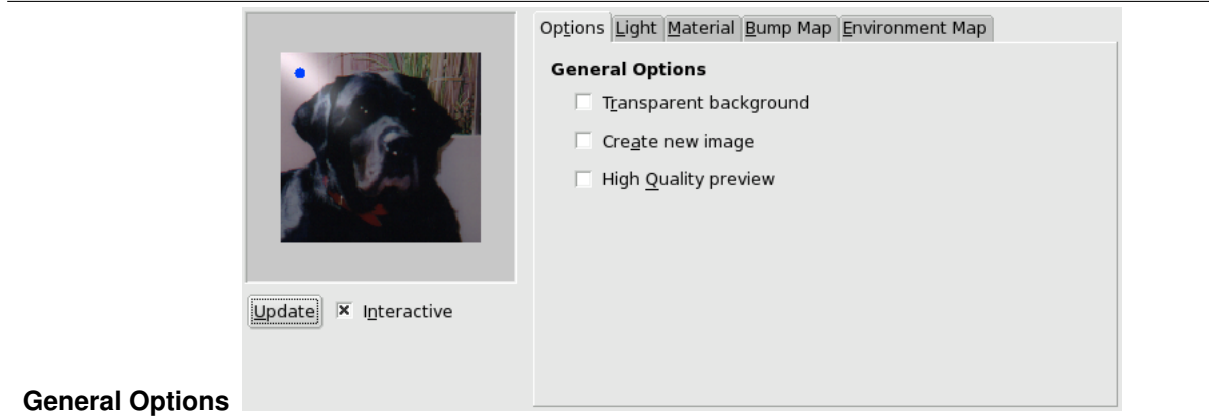
This filter is found in **Filters** → **Light Effectsender** → **Lighting Effects**

This filter simulates the effect you get when you light up a wall with a spot. It doesn't produce any drop shadows and, of course, doesn't reveal any new details in dark zones.

11.9.4.2. Options

Preview When **Interactive** is checked, parameter setting results are interactively displayed in preview without modifying the image until you click on **OK** button.

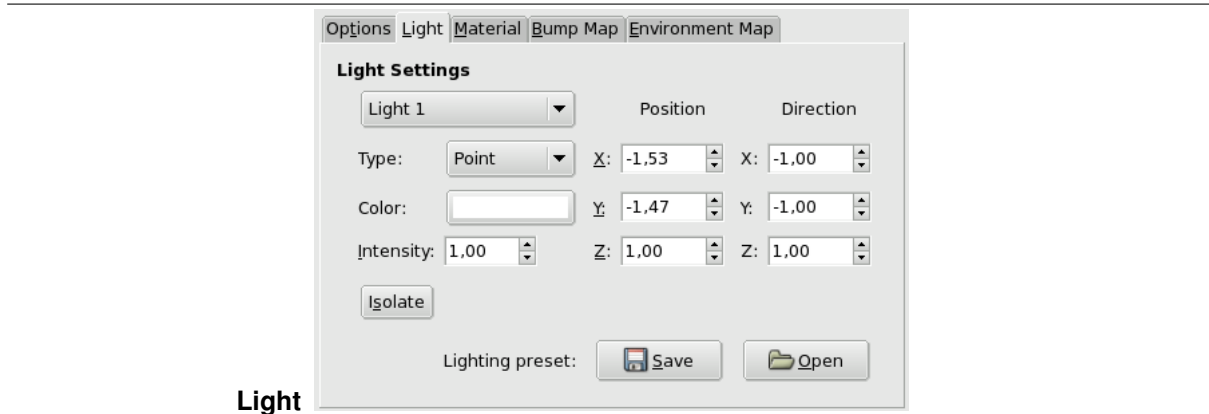
If "Interactive" is not checked, changes are displayed in preview only when you click on the **Update** button. This option is useful with a slow computer.

Figure 11.62. “Lighting” filter general options

Transparent Background **Transparent Background:** Makes destination image transparent when bumpmap height is zero (height is zero in black areas of the bumpmapped image).

Create New Image **Create New Image:** Creates a new image when applying filter.

High Quality Preview **High Quality Preview:** For quick CPU...

Figure 11.63. “Light” Options of the Lighting filter

In this tab, you can set light parameters. With **Light 1, 2,...6:** You can create six light sources and work on each of them separately.

Light Type This filter provides several **Light Types** in a drop-down list:

Point displays a blue point at center of preview. You can click and drag it to move light all over the preview.

Directional: the blue point is linked to preview center by a line which indicates the direction of light.

None: This deletes the light source (light may persist...).

Light Source Color **Light Source Color:** When you click on the color dwell, you bring a dialog up where you can select the light source color.

Intensity With this option, you can set light intensity.

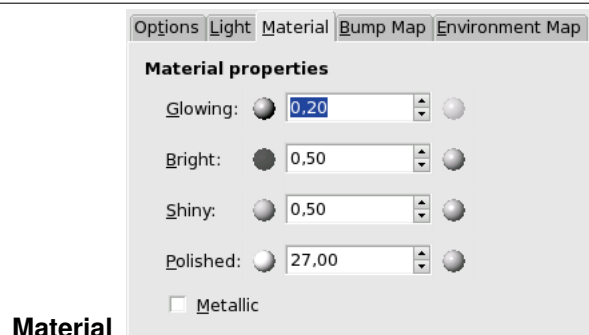
Position **Position:** Determines the light point position according to three coordinates: X coordinate for horizontal position, Y for vertical position, Z for source distance (the light darkens when distance increases). Values are from -1 to +1.

Direction This option should allow you to fix the light direction in its three **X**, **Y** and **Z** coordinates.

Isolate With this option, you can decide whether all light sources must appear in the Preview, or only the source you are working on.

Lighting Preset You can save your settings with the **Save** and get them back later with the **Open**.

Figure 11.64. “Material” tab of the Lighting filter



These options don't concern light itself, but light reflected by objects.

Small spheres, on both ends of the input boxes, represent the action of every option, from its minimum (on the left) to its maximum (on the right). Help pop ups are more useful.

Glowing With these option, you can set the amount of original color to show where no direct light falls.

Bright With this option, you can set the intensity of original color when hit directly by a light source.

Shiny This option controls how intense the highlight will be.

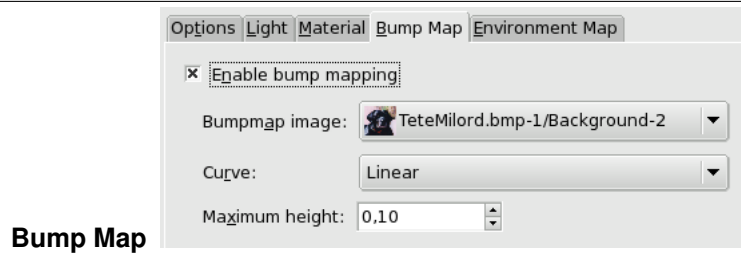
Hell With this option, higher values make the highlight more focused.

Metallic When this option is checked, surfaces look metallic.

In this tab, you can set filter options that give relief to the image.

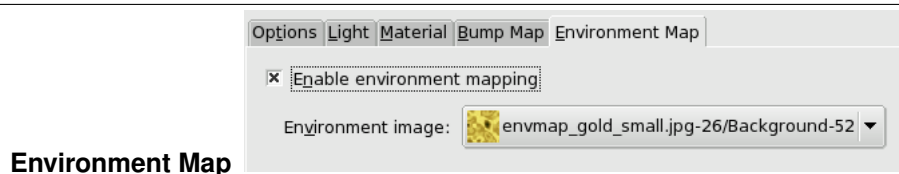
Enable Bump Mapping With this option, bright parts of the image will appear raised and dark parts will appear depressed. The aspect depends on the light source position.

Bump Map Image **Bump Map Image:** You have to select there the grey-scale image that will act as a bump map.

Figure 11.65. “Bumpmap” options of the Lighting filter

Curve **Curve:** Four curve types are available: *Linear*, *Logarithmic*, *Sinusoidal* and *Spherical*. See Bump Map plug-in for explanations.

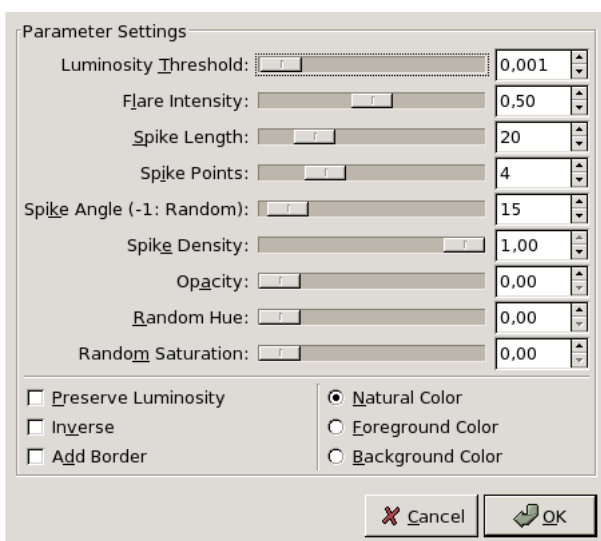
Maximum Height **Maximum Height:** This is the maximum height of bumps.

Figure 11.66. “Environment map” options

Enable Environment Mapping When you check this box, the following option is enabled:

Environment Image **Environment Image:** You have to select there a RGB image, present on your screen.

11.9.5. Sparkle



11.9.5.1. Overview

You can find this filter in the image menu under **Filters** → **Light Effects** → **Sparkle**

This filter adds sparkles to your image. It uses the lightest points according to a threshold you have determined. It is difficult to foresee where sparkles will appear. But you can put white points on your image where you want sparkles to be.

11.9.5.2. Parameter Settings

Sliders and input boxes allow you to set values.

Luminosity Threshold The higher the threshold, the more areas are concerned by sparkling (0.0-0.1).

Flare Intensity When this value increases, the central spot and rays widen (0.0-1.0).

Spike Length This is ray length (1-100). When you reduce it, small spikes decrease first.

Spike Points Number of starting points for spikes (0-16). It's the number of big spikes. There is the same number of small spikes. When number is odd, small spikes are opposite the big ones. When number is even, big spikes are opposite another big spike.

Spike Angle This is angle of first big spike with horizontal (-1 +360). -1 determines this value at random. If a spot has several pixels within required threshold, each of them will generate a sparkle. If angle is positive, they will all be superimposed. With -1, each sparkle will have a random rotation resulting in numerous thin spikes.

Spike Density This option determines the number of sparkles on your image. It indicates the percentage (0.0-1.0) of all possible sparkles that will be preserved.

Opacity When you decrease Opacity (0.0-1.0), sparkles become more transparent and the layer beneath becomes visible. If there is no other layer, sparkle saturation decreases.

Random Hue This option should change sparkle hue at random... (0.0-1.0)

Random Saturation This option should change sparkle saturation at random... (0.0-1.0)

Preserve Luminosity Gives to all central pixels the luminosity of the brightest pixel, resulting in increasing the whole sparkle luminosity.

Inverse Instead of selecting brightest pixels in image, Sparkle will select the darkest ones, resulting in dark sparkles.

Add Border Instead of creating sparkles on brightest pixels, this option creates an image border made up of numerous sparkles.

Natural, Foreground, Background Colors You can change there the color of central pixels. This color will be added in Screen mode (Multiply if Inverse is checked). You can select between **Natural color** (the color of the pixel in the image), **Foreground color** and **Background color**.

11.9.6. SuperNova



11.9.6.1. Overview

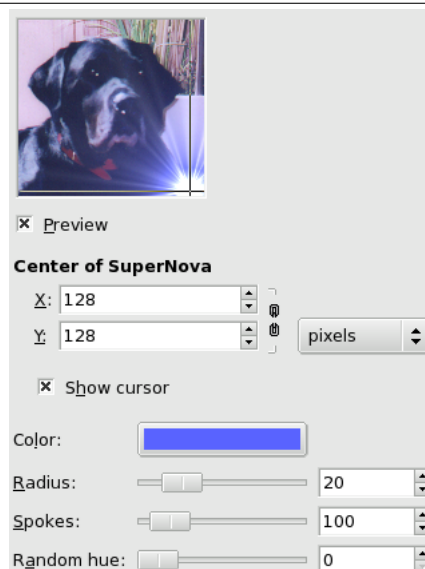
This filter is found in **Filters** → **Light Effectsender** → **Super Nova**

This filter creates a big star reminding a super-nova. It works with RGB and GRAY images. Light effect decreases according to $1/r$ where r is the distance from star center.

Dieses Filter erzeugt einen grossen Stern im Bild, der an eine Supernova erinnert. Sie können das Filter sowohl auf Farb- als auch auf Graustufenbilder anwenden.

11.9.6.2. Parameter Settings

Figure 11.67. “Supernova” filter options



Preview Parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Center of SuperNova

- You can use input boxes to set horizontal (X) and vertical (Y) coordinates of SuperNova center. You can also click and drag the SuperNova center in *preview*.

- **Show Cursor:** This option brings up a reticle in preview, centered on SuperNova.

Color Color: When you click on the color dwell, you bring up the usual color selector.

Radius Radius: This is radius of the SuperNova center (1-100). When you increase the value, you increase the number of central white pixels according to r^2 (1, 4, 9...).

Spokes Spokes: This is number of rays (1-1024). Each pixel in nova center emit one pixel wide rays. All these rays are more or less superimposed resulting in this glittering effect you get when you move this slider.

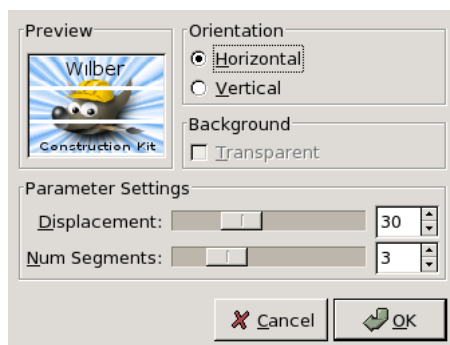
Random Hue Random Hue: Colours rays at random. (0-360) value seems to be a range in HSV color circle.

11.10. Distort filters

11.10.1. Distort filters introduction

The distort filters transform your image in many different ways.

11.10.2. Blinds



11.10.2.1. Overview

This filter is found in **Image > Filters > Distorts > Blinds**

It generates a blind effect with horizontal or vertical battens. You can lift or close these battens, but not lift the whole blind up.

11.10.2.2. Options

Preview All your setting changes will appear in the Preview without affecting the image until you click on **OK**.

Orientation Allows you to decide whether battens will be horizontal or vertical.

Background The batten color is that of the Toolbox Background. To be able to use the *Transparent* option, your image must have an Alpha channel.

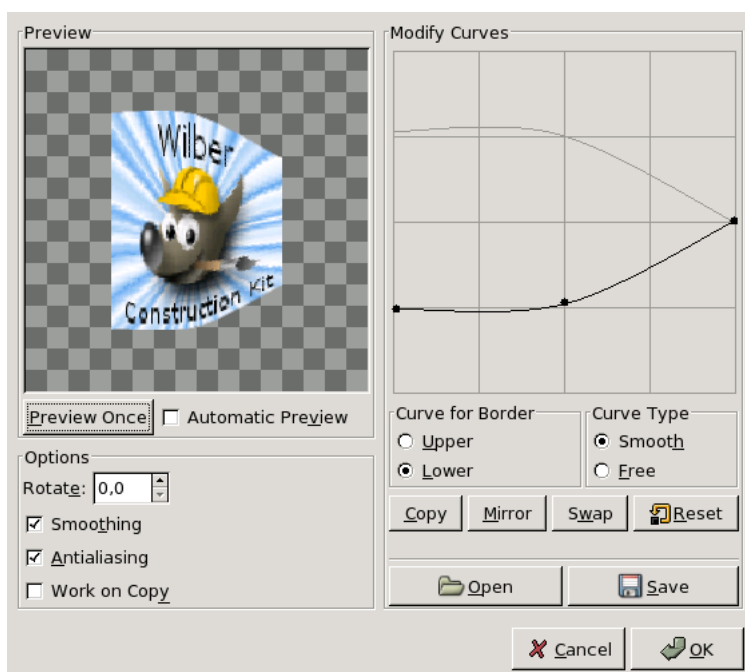
Parameter Settings Displacement: Slider and input box allow to wide battens giving the impression they are closing, or to narrow them, giving the impression they are opening.

Num Segments: It's the number of battens. Note that Displacement must be about 50 to have all gradations of this number.

11.10.2.3. Example



11.10.3. Curve Bend



11.10.3.1. Overview

This filter is found in **Filters** → **Distorts** → **Curve Bend**.

This filter allows you to create a curve that will be used to distort the active layer or selection. The distortion is applied gradually from an image or selection border to the other

11.10.3.2. Options

Preview The preview displays changes to image or selection without modifying the image until you press **OK**.

Preview Once This button allows you to update the preview each time you need it.

Automatic Preview With this option, preview is changed in real time. This needs much calculation and may lengthen work. It is particularly evident when using "Rotation".

Options

Rotate There, you can set the application angle of filter (0-360 counter- clockwise). 0 is default setting: The curve will be applied from the upper border and/or from the lower. Set to 90, it will be applied from left border and/or from the right one.

Smoothing and Antialiasing The distort process may create hard and stepped borders. These two options improve this aspect.

Work on Copy This option creates a new layer called "Curve_bend_dummy_layer_b" which becomes the active layer, allowing you to see changes to your image in normal size without modifying the original image until you press the "OK" key.

Modify Curve In this grid, you have a marked horizontal line, with a node at both ends, which represents by default the upper border of image. If you click on this curve, a new node appears, that you can drag to modify the curve as you want. You can create several nodes on the curve.

You can have only two curves on the grid, one for the so named "upper" border and the other for the so named "lower" border. You can activate one of them by checking the *Upper* or *Lower* radio button.

If you use the *Curve Type Free* option, the curve you draw will replace the active curve.

Curve for Border There you can select whether the active curve must be applied to the *Superior (or left)* or the *Inferior (or right)* border, according to the rotation.

Curve Type With the *Smooth*, you get automatically a well rounded curve when you drag a node.

The *Free* option allows you to draw a curve freely. It will replace the active curve.

Buttons

Copy Copy: Copy the active curve to the other border.

Mirror Mirror: Mirror the active curve to the other border.

Swap Swap: Swap the "superior" and "inferior" curves

Reset Reset: Reset the active curve.

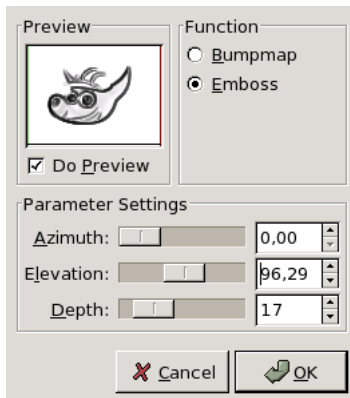
Open Open: Load the curve from a file.

Save Save: Save the curve to a file.

11.10.3.3. Example

GIMP GIMP

11.10.4. Emboss



11.10.4.1. Overview

This filter is found in **Image>Filters/Distorts/Emboss**.

You can use it only with RGB images. If your image is grayscale, it will be grayed out in the menu.

It stamps and carves the active layer or selection, giving it relief with bumps and hollows. Bright areas are raised and dark ones are carved. You can vary the lighting.

11.10.4.2. Options

Preview All your setting changes will appear in the Preview without affecting the image until you click on **OK**. Note that the preview displays the whole image, even if the final result will concern a selection. Don't keep *Do Preview* checked if your computer is too much slow.

Functions Bumpmap: Relief is smooth and colors are preserved.

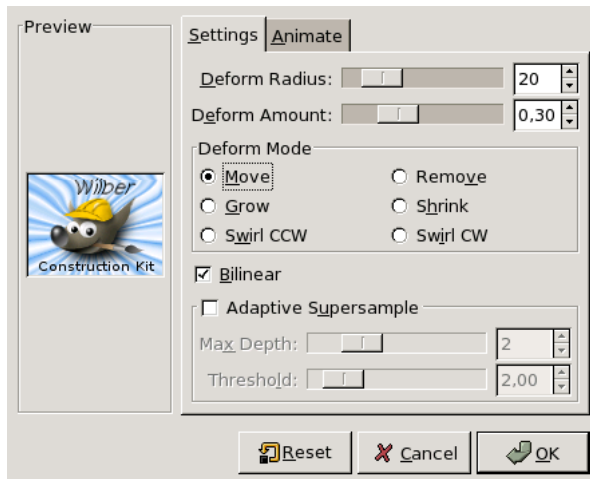
Emboss: It turns your image to grayscale and relief is more marked, looking like metal.

Azimuth Azimuth: This is about lighting according to the points of the compass (0 - 360). If you suppose South is at the top of your image, then East (0°) is on the left. Increasing value goes counter-clockwise.

Elevation Elevation: That's height from horizon (0°), in principle up to zenith (90°), but here up to the opposite horizon (180°).

Depth Depth Seems to be the distance of the light source. Light decreases when value increases.

11.10.5. IWarp



11.10.5.1. Overview

This filter is found in **Image>Filters/Distorts/IWarp**

This filter allows you to deform interactively some parts of the image and, thanks to its Animate option, to create the elements of a fade in/fade out animation between the original image and the deformed one, that you can play and use in a Web page.

To use it, first select a deform type then click on the Preview and drag the mouse pointer.

11.10.5.2. Settings

Settings The Settings tab allows you to set parameters which will affect the preview you are working on. So, you can apply different deform modes to different parts of the preview.

Preview Here, the Preview is your work space: You click on the Preview and drag mouse pointer. The underlying part of image will be deformed according to the settings you have chosen. If your work is not convenient, press *Reset* button.

Deform Mode

- **Move:** Allows you to *stretch* parts of the image.
- **Remove:** This remove the distortion where you drag the mouse pointer, partially or completely. This allows you to avoid pressing Reset button, working on the whole image. Be careful when working on an animation: this option will affect one frame only.
- **Grow:** This option inflates the pointed pattern.
- **Shrink:** Self explanatory.
- **Swirl CCW:** Create a vortex counter clockwise.
- **Swirl CW:** Create a vortex clockwise.

Deform Radius Defines the radius, in pixels (5-100), of the filter action circle around the pixel pointed by the mouse.

Deform Amount Sets how much out of shape your image will be put (0.0-1.0).

Bilinear This option smoothes the IWarp effect.

Adaptative Supersample This option renders a better image at the cost of increased calculation.

Max Depth: FIXME

Threshold: FIXME

Animate This option allows to generate several intermediate images between the original image and the final deformation of this image. You can play this animation thanks to the plugin Playback .

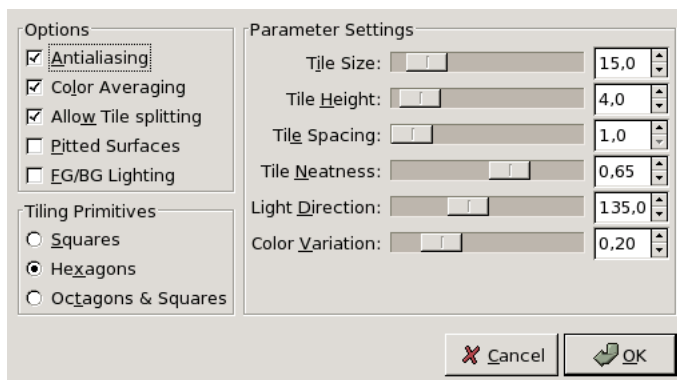
Number of Frames That's the number of images in your animation (2-100). These frames are stored as layers attached to your image. Use the XCF format when saving it.

Reverse This option plays the animation backwards.

Ping-Pong When the animation ends one way, it goes backwards.

11.10.5.3. Example

11.10.6. Mosaic



11.10.6.1. Overview

This filter is found in **Image>Filters/Distorts/Mosaic...**

It cuts the active layer or selection into many squares or polygons which are slightly raised and separated by joins, giving so an aspect of mosaic.

11.10.6.2. Options

Options

Antialiasing **Antialiasing:** This option reduces the stepped aspect that may have borders.

Color Averaging **Color Averaging** When this option is unchecked, the image drawing can be recognized inside tiles. When checked, the colors inside tiles are averaged into a single color.

Allows Tile Splitting **Allows Tile Splitting:** This option splits tiles in areas with many colors, and so allows a better color gradation and more details in these areas.

Pitted Surfaces **Pitted Surfaces:** With this option tile surface looks pitted.

FG/BG Lighting **FG/BG Lighting:** When this option is checked, tiles are lit by the foreground color of the toolbox, and shadow is colored by the background color. Joins have the background color.

Parameter setting

Tile Size **Tile Size:** Slider and input box allow you to set the size of tile surface.

Tile Height **Tile Height:** That's ledge, relief of tiles. Value is width of the lit border in pixels.

Tile Spacing **Tile Spacing:** That's width of the join between tiles.

Tile Neatness **Tile Neatness:** When set to 1, most of tiles have the same size. With 0 value, size is determined at random and this may lead to shape variation.

Light Direction **Light Direction:** By default light comes from the upper left corner (135°). You can change this direction from 0 to 360 (counter clockwise).

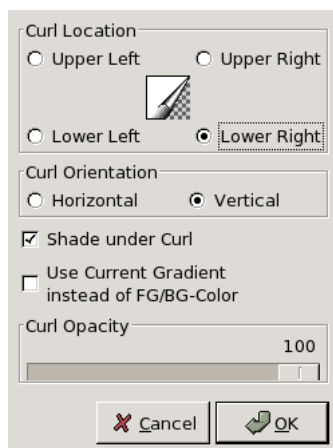
Color Variation **Color Variation:** Each tile has only one color. So, the number of colors is reduced, compared to the original image. Here, you can increase the number of colors, a little.

Tile Primitives This options are self-understanding:

Diese Eigenschaft ist weitgehend selbsterklärend, sie beschreibt die Grundform der Kacheln:

- **Squares**
- **Hexagons:** (hexa = 6)
- **Octogons and Squares:** (octo = 8)

11.10.7. Page Curl



11.10.7.1. Overview

This filter is found in **Image > Filters > Distorts > PageCurl**

It curls a corner of the current layer or selection into a kind of corner showing the underlying layer in the cleared area. A new "Curl Layer" and a new Alpha channel are created. The part of the initial layer corresponding to this cleared area is also transparent.

11.10.7.2. Options

Curl Location You have there four radio buttons to select the corner you want raise. The Preview is redundant and doesn't respond to other options.

Curl Orientation *Horizontal* and *Vertical* refer to the border you want raise.

Shadow under curl This is the shadow inside the corner.

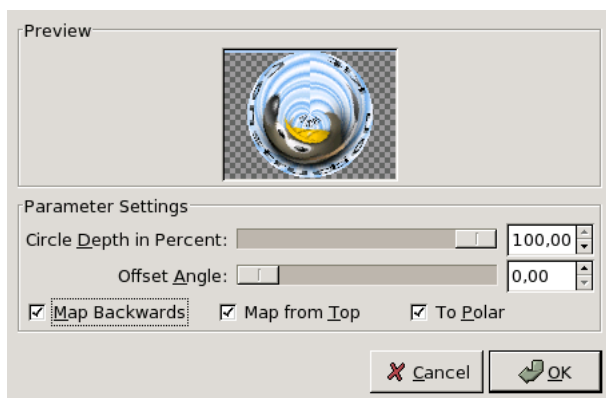
Use current gradient instead of FG/FB-color This color refers to the outer face of the corner.

Curl Opacity Refers to the visibility of the layer part underlying the corner. It may be set also in the Layer Dialog.

11.10.7.3. Example



11.10.8. Polar Coords



11.10.8.1. Overview

This filter is found in **Filters** → **Distorts** → **Polar Coords**.

It gives a circular or a rectangular representation of your image with all the possible intermediates between both.

11.10.8.2. Options

Preview The result of your settings will appear in the Preview without affecting the image until you click on **OK**.

Circle Depth in Percent Slider and input box allow you to set the "circularity" of the transformation, from rectangle (0%) to circle (100%).

Offset Angle This option controls the angle the drawing will start from (0 - 359°), and so turns it around the circle center.

Map Backwards When this option is checked, the drawing will start from the right instead of the left.

Map from Top If unchecked, the mapping will put the bottom row in the middle and the top row on the outside. If checked, it will be the opposite.

To Polar If unchecked, the image will be circularly mapped into a rectangle (odd effect). If checked, the image will be mapped into a circle.

11.10.8.3. Examples

Figure 11.68. With text. If you have just written the text, you must Flatten the image before using the filter.

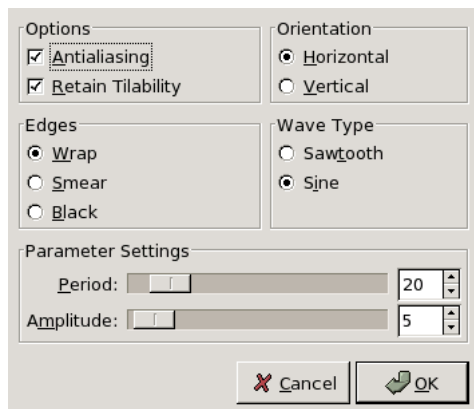
THE GIMP



Figure 11.69. With text



11.10.9. Ripple



11.10.9.1. Overview

This filter is found in **Image > Filters > Distorts > Ripple...**

It displaces the pixels of the active layer or selection to waves or ripples reminding a reflection on disturbed water.

11.10.9.2. Options

Preview The result of your settings will appear in the Preview without affecting the image until you click on **OK**.

Options

Antialiasing **Antialiasing:** This improves the scaled look the image borders may have.

Retain Tileability **Retain Tileability:** This preserves the seamless properties if your image is a tile pattern.

Orientation That's the **Horizontal** or **Vertical** direction of waves.

Borders Because of ripples, that are a pixel displacement, some pixels may be missing on the image sides:

Da durch das Filter Pixel im Bild verschoben werden, kann es passieren, dass an den Bildkanten Pixel fehlen. Sie können mit dieser Eigenschaft festlegen, was in einem solchen Fall geschehen soll.

- With **Wrap**, pixels going out one side will come back on the other side, replacing so the missing pixels.
- With **Smear**, the adjacent pixels will spread out to replace the missing pixels.
- With **Black**, the missing pixels will be replaced by black pixels.

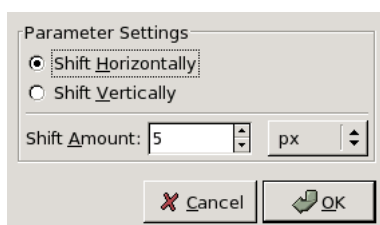
Wave Type These options are self-explanatory

- **Sawtooth**
- **Sine**

Periode The **Periode** is related to wavelength (0-200 pixels)

Amplitude The **Amplitude** is related to wave height (0-200 pixels).

11.10.10. Shift



11.10.10.1. Overview

This filter is found in **Filters** → **Distorts** → **Shift**.

It shifts all pixel rows, horizontally or vertically, in the current layer or selection, on a random distance and within determined limits.

11.10.10.2. Options

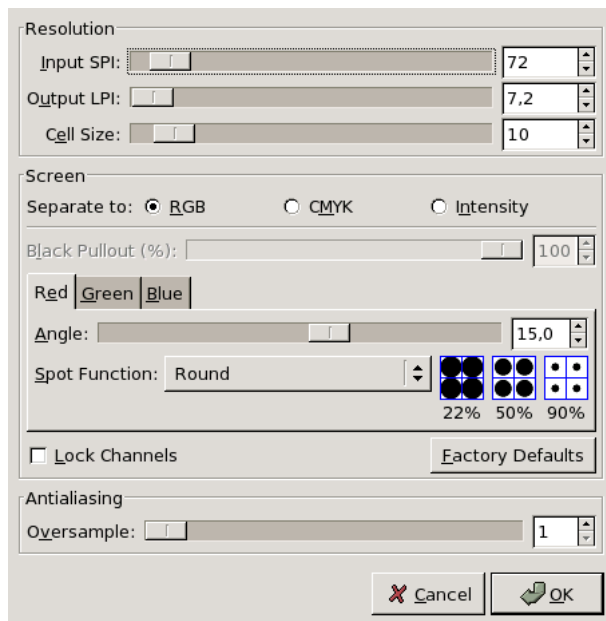
Preview The result of your settings will appear in the Preview without affecting the image until you click on **OK**.

These options are self-explanatory: **Shift Horizontally**

Shift vertically

Shift Amount

11.10.11. Newsprint



11.10.11.1. Overview

This filter is found in **Image > Filters > Distorts > Newsprint**

This filter halftones the image using a clustered-dot dither. Halftoning is the process of rendering an image with multiple levels of grey or colour (i.e. a continuous tone image) on a device with fewer tones; often a bi-level device such as a printer or typesetter.

The basic premise is to trade off resolution for greater apparent tone depth (this is known as spatial dithering).

There are many approaches to this, the simplest of which is to throw away the low-order bits of tone information; this is what the posterize filter does. Unfortunately, the results don't look too good. However, no spatial resolution is lost.

This filter uses a clustered-dot ordered dither, which reduces the resolution of the image by converting cells into spots which grow or shrink according to the intensity that cell needs to represent.

Imagine a grid super-imposed on the original image. The image is divided into cells by the grid - each cell will ultimately hold a single spot made up of multiple output pixels in order to approximate the darkness of the original image in that cell.

Obviously, a large cell size results in a heavy loss in resolution! The spots in the cells typically start off as circles, and grow to be diamond shaped. This change in shape is controlled by a **spot function**. By using different spot functions, the evolution in the shape of the spots as the cell goes from fully black to fully white may be controlled.

11.10.11.2. Options

Preview All your setting changes will appear in the Preview without affecting the image until you click on **OK**. Note that the preview displays the whole image, even if the final result will concern a selection. Don't keep *Do Preview* checked if your computer is too much slow.

Resolution This group controls the cell size, either by setting the input and output resolutions, or directly.

Input SPI **Input SPI**: Resolution of the original input image, in Samples Per Inch (SPI). This is automatically initialised to the input image's resolution.

Output LPI **Output LPI**: Desired output resolution, in Lines Per Inch (LPI).

Cell Size **Cell Size:** Resulting cell size, in pixels. Most often you will want to set this directly.

Screen

Separate To RGB, CMYK, Intensity **Separate To RGB, CMYK, Intensity:** Select which colorspace you wish to operate in. In *RGB* mode, no colorspace conversion is performed. In *CMYK*, the image is first internally converted to CMYK, then each colour channel is separately halftoned, before finally being recombined back to an RGB image. In *Intensity* mode, the image is internally converted to grayscale, halftoned, then the result used as the alpha channel for the input image. This is good for special effects, but requires a little experimentation to achieve best results. Hint: try CMYK if you don't know which to go for initially.

Black Pullout (%) **Black Pullout (%)** When doing RGB->CMYK conversion, how much K (black) should be used?

Lock Channels **Lock Channels:** Make channel modifications apply to all channels.

Factory Defaults **Factory Defaults:** Restore the default settings which should give pleasing results.

Angle **Angle:** Cell grid angle for this channel.

Spot Function **Spot Function:** Spot function to be used for this angle (see preview in blue cell-boxes).

Antialiasing Proper halftoning does not need antialiasing: the aim is to reduce the colour depth after all! However, since this plugin is mainly for special effects, the results are displayed on screen rather than by a black/white printer. So it is often useful to apply a little anti-aliasing to simulate ink smearing on paper. If you do want to print the resulting image then set the antialiasing to 1 (ie, off).

Oversample **Oversample:** Number of subpixels to sample to produce each output pixel. Set to 1 to disable this feature. Warning: large numbers here will lead to very long filter runtimes!

TIP

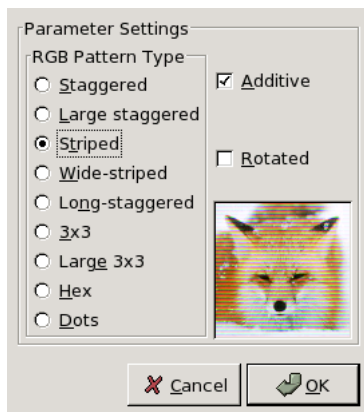


More explanations, illustrative diagrams, a gallery and a tutorial are to be found on the plug-in author site: <http://www.cl.cam.ac.uk/~and1000/newsprint/> [<http://www.cl.cam.ac.uk/~and1000/newsprint/>](http://www.cl.cam.ac.uk/~and1000/newsprint/) You are strongly encouraged to visit it, since halftoning is a large and complex area.

Here is an example, from the author's gallery:



11.10.12. Video



11.10.12.1. Overview

This filter is found in **Image>Filters/Distorts/Video**.

Apply low dotpitch RGB simulation to the specified drawable.

11.10.12.2. Options

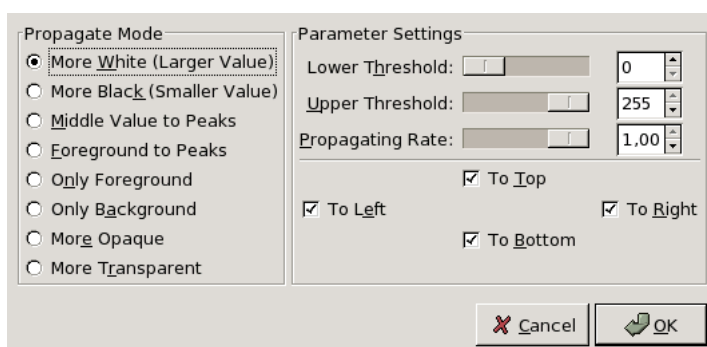
Preview This preview is unusual: Changes appear always on the same image which is not yours.

RGB Pattern Type It would be rather difficult to describe what each pattern will render. It's best to see what they render in the Preview.

Additive Set whether the function adds the result to the original image.

Rotated Rotate the result by 90°.

11.10.13. Value Propagate



11.10.13.1. Overview

This filter is found in **Image>Filters/Distorts/Value Propagate**

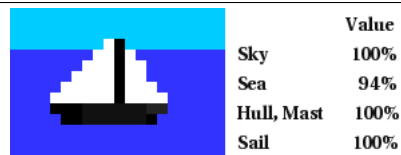
It works on color borders. It spreads pixels that have a Value between selected thresholds, in selected directions.

11.10.13.2. Options

Preview The result of your settings will appear in the Preview without affecting the image until you click on **OK**.

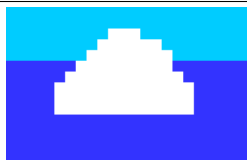
Propagate Mode The examples will be about the following image (zoom x8):

Figure 11.70. Example



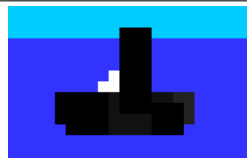
- **More White:** Pixels will be propagated from upper Value pixels towards lower Value pixels. So bright areas will enlarge.

Figure 11.71. More White



- **More Black:** Pixels will be propagated from lower Value pixels towards upper Value pixels. So dark areas will enlarge.

Figure 11.72. More Black



- **Middle Value to Peaks:** On a border between the selected thresholds, it blends the two colors.
- **Foreground to Peaks:** The propagated areas will be filled with the foreground color of the toolbox.
- **Only Foreground:** Only areas with the Foreground color will propagate.
- **Only Background:** Only areas with the Background color will propagate.
- **More Opaque** and **More Transparent:** These commands work like More White and More Black. Propagated areas will be more opaque or more transparent. These commands need an image with an Alpha channel.

Parameters Settings

Lower Threshold **Lower Threshold** and **Upper Threshold:** These commands allow you to set the Value range that will be concerned by Propagate.

Propagating Rate **Propagating Rate:** That's the propagating amount. The higher it will be the more colored the propagation will be.

Propagating Direction **Propagating Direction:** You can select one or more directions.

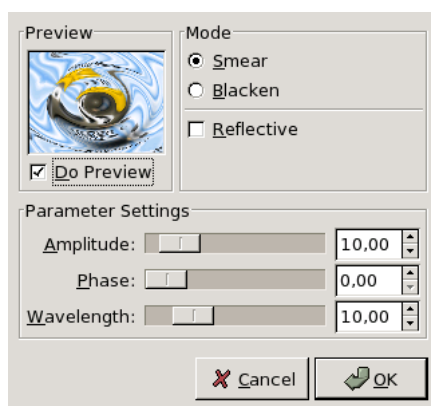
Figure 11.73. Middle Value to Peaks



Figure 11.74. Foreground to Peaks



11.10.14. Waves



11.10.14.1. Overview

This filter is found in **Image > Filters > Distorts > Waves**.

With this filter you get the same effect as a stone thrown in a quiet pond, giving concentric waves.

11.10.14.2. Options

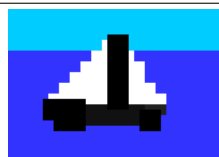
Preview All your setting changes will appear in the Preview without affecting the image until you click on **OK**. Don't keep *Do Preview* checked if your computer is too much slow.

Modes

- **Smear:** Because of the waves, areas are rendered empty on sides. The adjacent pixels will spread to fill them.
- **Blacken:** The empty areas will be filled by black color.

Reflective Reflective: Waves bounce on sides and interfere with the arriving ones.

Figure 11.75. Only Foreground

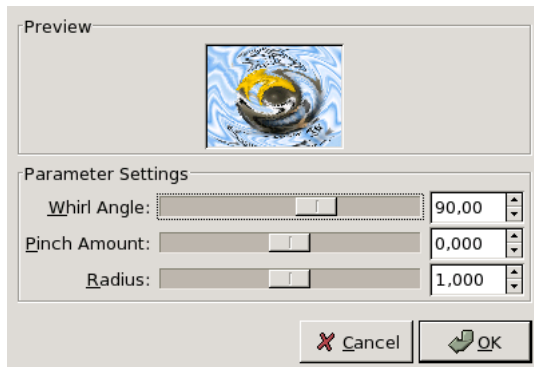


Amplitude **Amplitude:** Varies the height of waves.

Phase **Phase:** This command shifts the top of waves.

Wavelength **Wavelength** Varies the distance between the top of waves.

11.10.15. Whirl and Pinch



11.10.15.1. Overview

This filter is found in **Filters** → **Distorts** → **Whirl and Pinch**

“Whirl and Pinch” distorts your image in a concentric way.

“Whirl” distorts the image much like the little whirlpool that appears when you empty your bath.

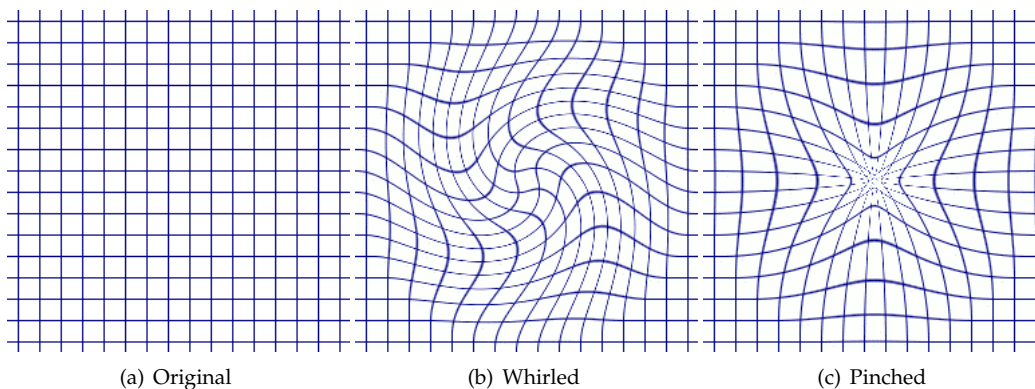
“Pinch” can be compared to applying your image to a soft rubber surface and squeezing the edges or corners. If the Pinch amount slider is set to a negative value, it will look as if someone tried to push a round object up toward you from behind the rubber skin. If the Pinch amount is set to a positive value, it looks like someone is dragging or sucking on the surface from behind, and away from you.

TIP



The “pinch” effect can sometimes be used to compensate for image distortion produced by telephoto or fisheye lenses (“barrel distortion”).

Figure 11.76. Illustration



11.10.15.2. Parameter Settings

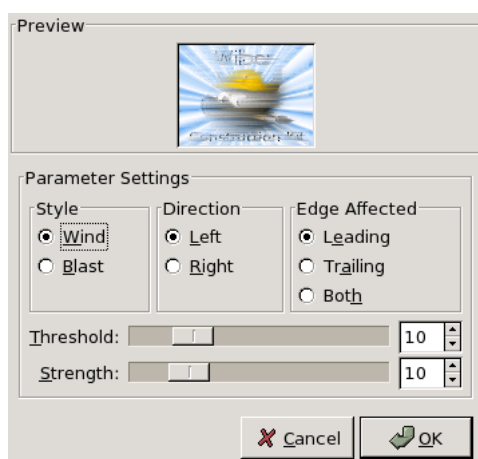
Preview Changes to parameters are immediately displayed into the *Preview*. The whirlpool is focused around the center of the current layer or selection.

Whirl Angle Whirl Angle: Clockwise or counter clockwise (-360 to +360). Controls how many degrees the affected part of the image is rotated.

Pinch Amount Pinch Amount: Whirlpool depth(-1 to +1). Determines how strongly the affected part of the image is pinched.

Radius Radius: Whirlpool width (0.0-2.0). Determines how much of the image is affected by the distortion. If you set *Radius* to 2, the entire image will be affected. If you set *Radius* to 1, half the image will be affected. If *Radius* is set to 0, nothing will be affected (think of it as the radius in a circle with 0 in the center and 1 halfway out).

11.10.16. Wind



11.10.16.1. Overview

This filter is found in **Image > Filters > Distorts > Wind**.

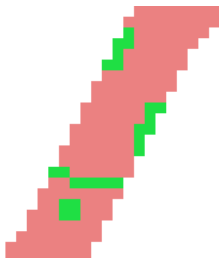
The Wind filter can be used to create motion blur, but it can also be used as a general distort filter. What is characteristic about this filter is that it will render thin black or white lines. Wind will detect the edges in the image, and stretch out thin white or black lines from that edge. This is why you can create the illusion of motion, because the edges are what will be blurred in a photograph of a moving object.

11.10.16.2. Parameter Settings

The interface is quite simple. You can set the *Strength* of the wind and a *Threshold* value. *Threshold* will restrict the effect to fewer areas of the image. *Strength* controls the amount of wind, so a high value will render a storm. You can also increase the effect by setting the *Style* to Blast, which will produce thicker lines than Wind.

You can only set the wind in two directions, either Left or Right. However, you can control which edge the wind will come from using the values Leading, Trailing or Both. Because Trailing will produce a black wind, it creates a less convincing motion blur than Leading, which will produce white wind.

The following illustrations are based on this image:



Preview All your setting changes will appear in the Preview without affecting the image until you click on **OK**. It reproduces a part of the image only, centred on the first modified area it encounters.

Style

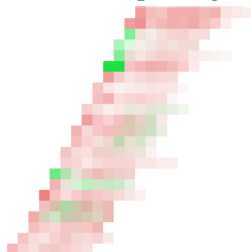
- **Wind:** This option is the most suggestive of a moving effect. Trails are thin.
- **Blast:** This option tries to suggest a blast due to an explosion. Trails are thick.



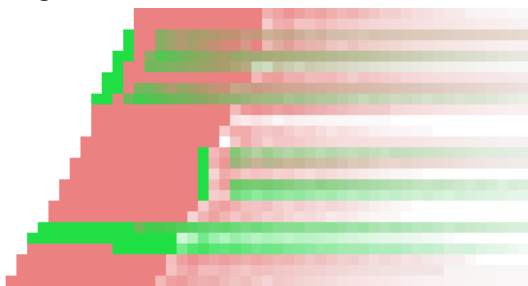
Direction You can select the direction, *Left* or *Right*, from which the wind comes.

Edge Affected

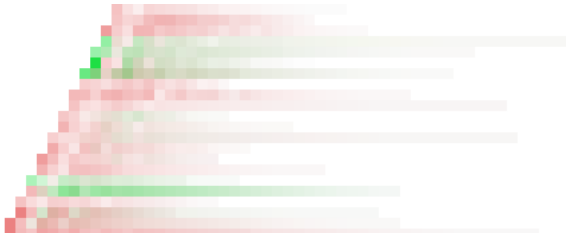
- **Leading:** Trails will start from the front border, falling on the object itself. It suggests that a violent wind is pulling color out.



- **Trailing:** Trails start from the back border of the object.



- **Both:** Combines both effects.



Threshold **Threshold:** The threshold to detect borders. The higher it is, the fewer borders will be detected.

Strength **Strength:** Higher values increase the strength of the effect.

11.11. Artistic filters

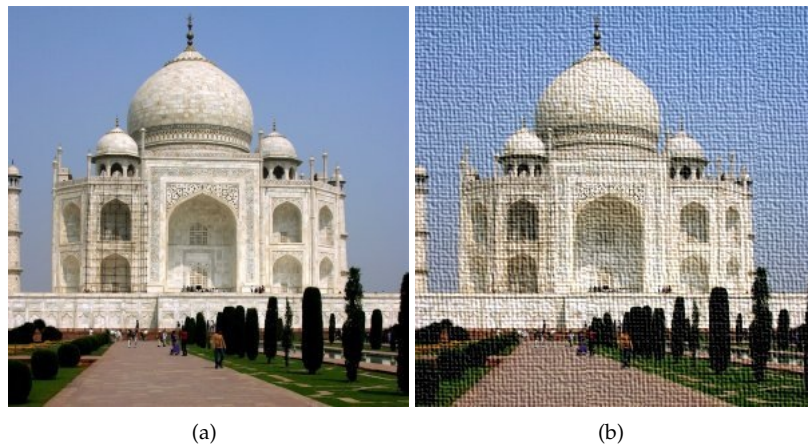
11.11.1. Artistic filters introduction

Artistic filters create artistic effects like cubism, oil painting, canvas...

11.11.2. Apply Canvas

11.11.2.1. Overview

Figure 11.77. The same image, before and after applying “Apply Canvas” filter

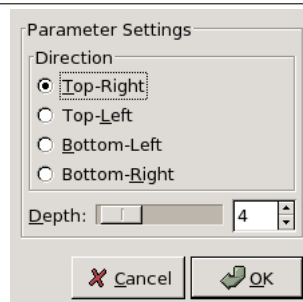


This filter is found in **Image>Filters/Artistic/Apply Canvas...**

This filter applies a canvas-like effect to the current layer or selection. It textures the image as if it were an artist’s canvas.

11.11.2.2. Options

Figure 11.78. “Apply Canvas” options



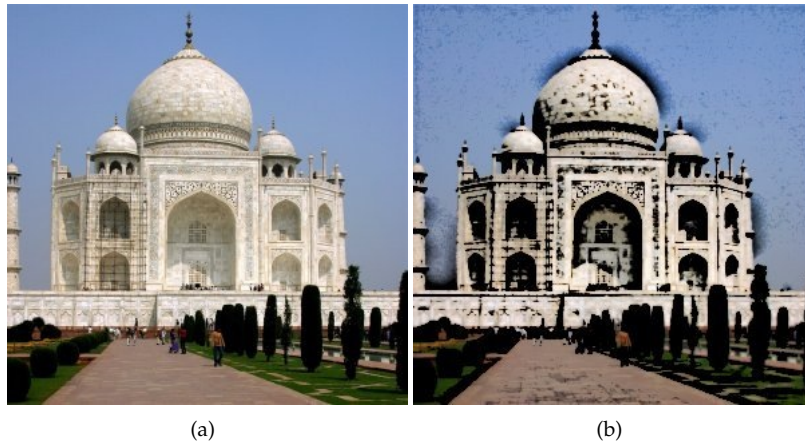
Direction Direction sets the starting direction of the canvas render.

Depth The Depth slider controls the apparent depth of the rendered canvas effect from 1 (very flat) to 50 (very deep).

11.11.3. Cartoon

11.11.3.1. Overview

Figure 11.79. The same image, before and after applying “Cartoon” filter

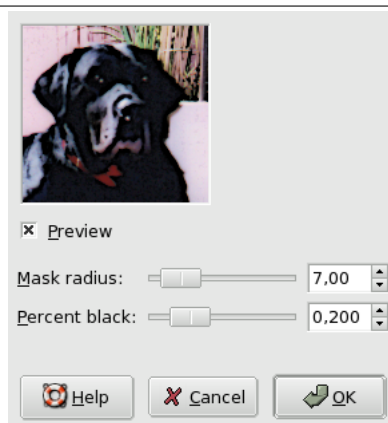


This filter is found in **Filters** → **Artistic** → **Cartoon**

The Cartoon filter modifies the active layer or selection so that it looks like a cartoon drawing. Its result is similar to a black felt pen drawing subsequently shaded with color. This is achieved by darkening areas that are already distinctly darker than their neighborhood.

11.11.3.2. Options

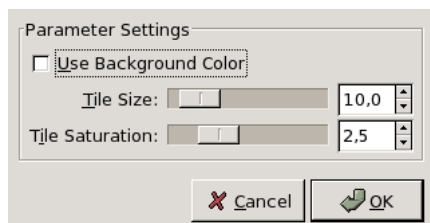
Figure 11.80. “Cartoon” filter options



Mask radius This parameter controls the size of areas the filter works with. Large values result in very thick black areas and much less detail in the resulting image. Small values result in more subtle pen strokes and more details preserved.

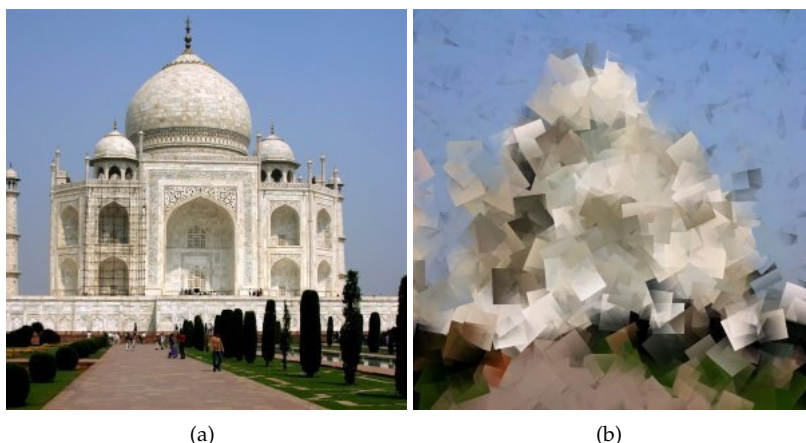
Percent black This parameter controls the amount of black color added to the image. Small values make the blend from color regions to blackened areas smoother and dark lines themselves thinner and less noticeable. Larger values make the lines thicker, darker and sharper. The maximum value makes the lines aliased. The best, most natural results are usually achieved with an intermediate value.

11.11.4. Cubism



11.11.4.1. Overview

Figure 11.81. The same image, before and after applying Cubism filter Stejný obrázek před a po aplikaci filtru Kubismus



This filter is found in **Filters** → **Artistic** → **Cubism**

The Cubism plug-in modifies the image so that it appears to be constructed of small squares of semi-transparent tissue paper.

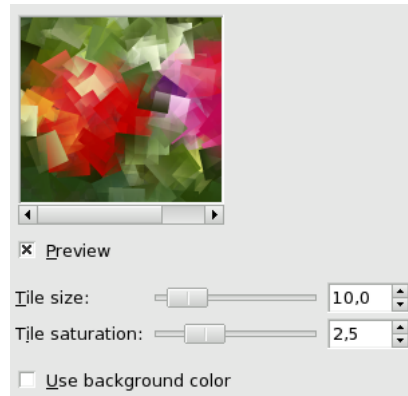
TIP



If setting possibilities of this filter are not enough for you, see [GIMPpressionist](#) filter which offers more options.

11.11.4.2. Options

Tile Size This variable determines the size, in pixels, of the squares to be used. This is, in effect, the size of the little squares of tissue paper used in generating the new image. The slider can be used, the exact pixel size can be entered into the text box, or the arrow buttons can be used.

Figure 11.82. “Cubism” filter options

Tile Saturation This variable specifies how intense the color of the squares should be. This affects the opacity of the squares. A high value will render the squares very intensely and does not allow lower squares to show through. A lower value allows the lower squares to be more visible through the higher ones and causes more blending in the colors. If this is set to 0 and Use Background Color is not checked, the entire layer will be rendered black. If it is checked and the value here is zero, the background color will fill the entire layer.

Use Backgroundcolor This selection box determines whether the background color displayed in the Toolbox should be used when applying the filter. If it is not checked, black will be used instead.

TIP



If you are using this to generate background images for web pages and the like, work with a small range of colors painted randomly on a small square. Then apply the Cubism filter with the desired settings. As a last step, try Filters/Map/Make Seamless to adjust the image so it will tile seamlessly in your background.

11.11.5. GIMPressionist

11.11.5.1. Overview

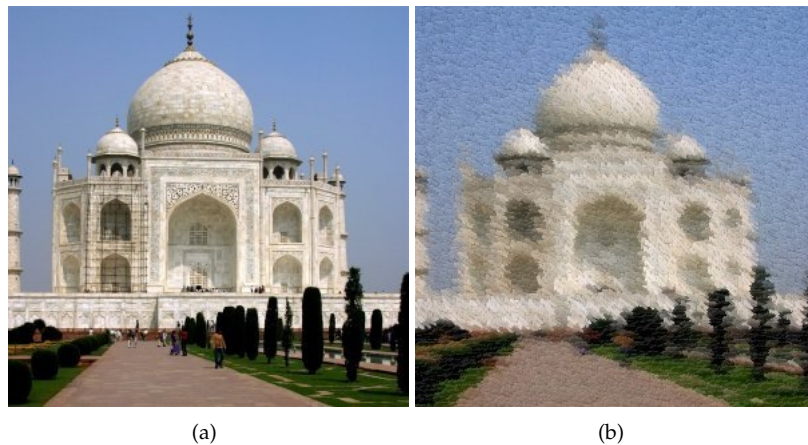
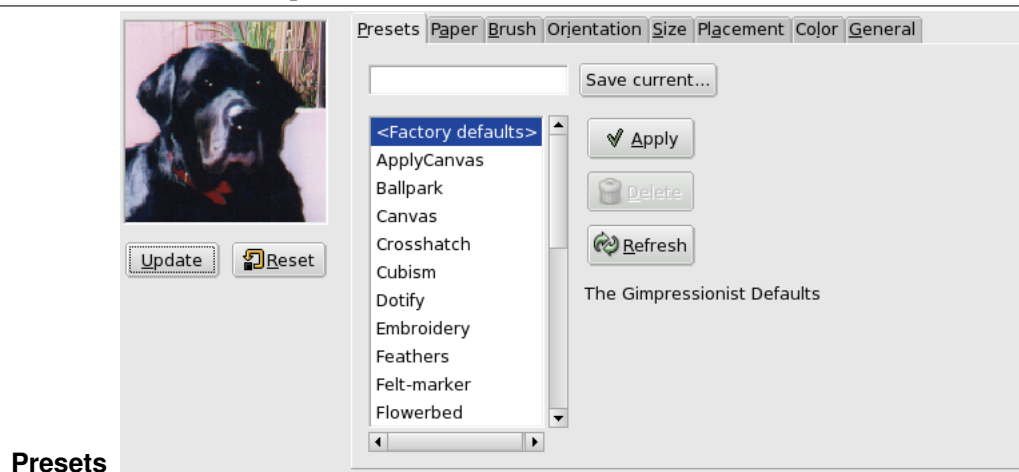
You can find this filter via the image menu under **Filters** → **Artistic** → **GIMPressionist**

It's the king of Artistic filters. It can do what Cubism and Apply Canvas do and much more. It gives your image the look of a painting. All is going as if your image was painted again on a paper and with a brush you'd have chosen. It works on the active layer or selection.

11.11.5.2. Parameter Settings

Preview All your setting changes will appear in the Preview without affecting the image until you click on **OK**. The **Update** button refreshes the preview window (it is not automatical, Gimpresionist has so much work to do!), and the **Reset** button reverts to the original image.

GIMPressionist has a lot of parameters. When combined, they give an astronomical number of possibilities. So, it is important, when an interesting preset has been found, to save it and also to send it to the plugin author if exceptionnal. Per contra, the intricacy of all these parameters makes difficult understanding and foreseeing how each one works.

Figure 11.83. The same image, before and after applying GIMPpressionist**Figure 11.84.** “Presets” tab options

- **Save Current:** Save current parameters. You can give a name in the input box on the left and a short description in the dialog that appear.
- **Apply:** Load the parameters of the selected preset in the list.
- **Delete:** Delete the selected preset. You can delete only the presets you have created.
- **Refresh:** Update the preset list.

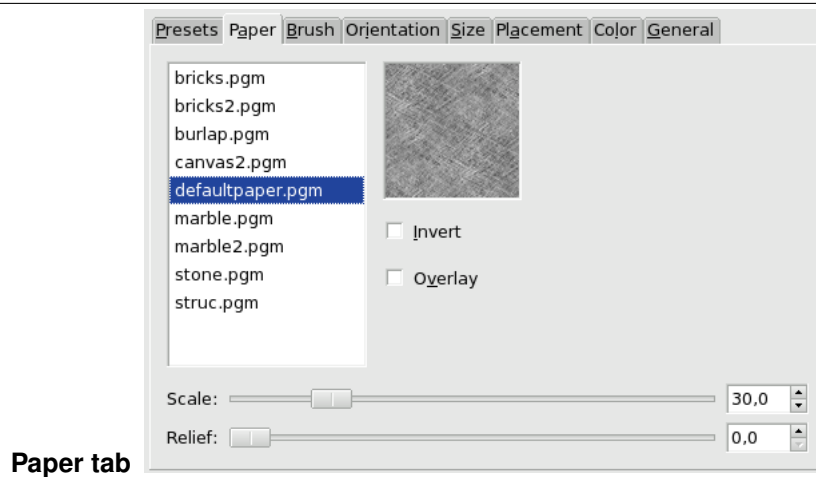
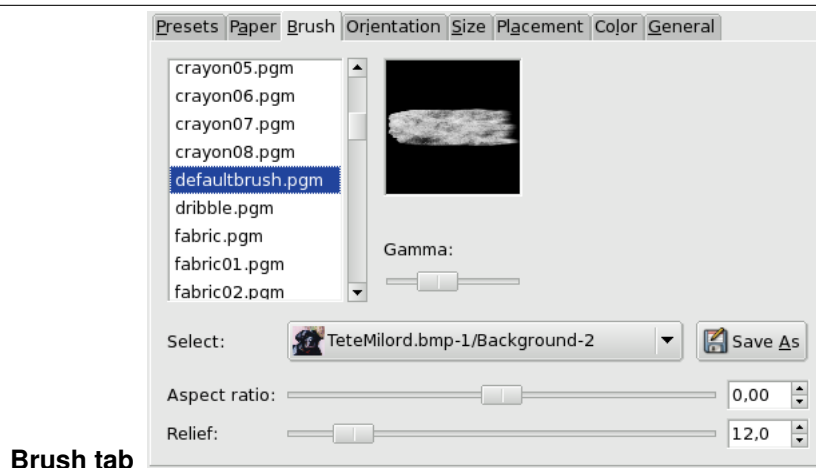
This tab concerns the texture of the canvas your image will be painted on. You have a list of textures and a **Preview** for the selected texture. A description is displayed on the right for every texture when selected.

Invert Inverts the paper texture: what was a hollow turns to a bump and vice-versa.

Overlay Apply the paper as it, without embossing it. It looks like if a transparent paper has been overlayed on the image.

Scale Specifies the scale of the texture (in % of the original file): controls the graininess of the texture.

Relief Specifies the amount of embossing to apply (3-150).

Figure 11.85. “Paper” tab options**Paper tab****Figure 11.86.** “Brush” tab options**Brush tab**

“Brush” is a general term for any material used to paint. A list of brushes is available with a **Preview** for the selected one.

Gamma Changes the gamma (luminosity) of the selected brush. The gamma correction brightens or darkens midtones.

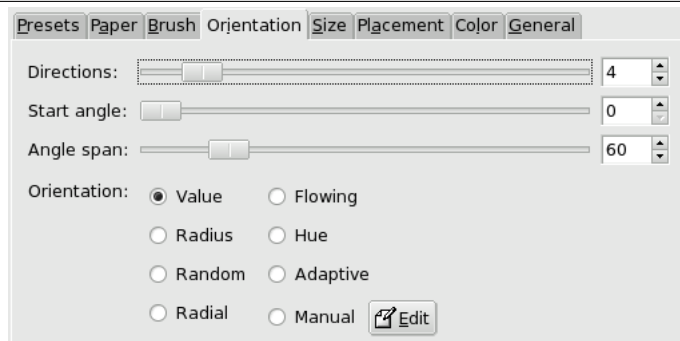
Select You can also use a brush pattern you have created by selecting its image (arrow button on the Select line). This image must be on your screen before you launch the filter to be taken in account. Of course, don’t use big images.

If your image has several layers, they also will be displayed in the Select list and can be used as a brush. When selected, the layer appears in the brush preview and the normal brush is deselected.

The **Save as** allows you to save the selected brush.

Aspect ratio Specifies the brush proportions, height (0 -1) and width (0 +1).

Relief Specifies the amount of paint used for each stroke. This may evoke painting with a palette knife.

Figure 11.87. “Orientation” tab options**Orientation tab**

This tab allows to set the orientation of the brush strokes. A painter is not obliged to go over with the same paintbrush angle. To perform some effects, he can vary their orientation.

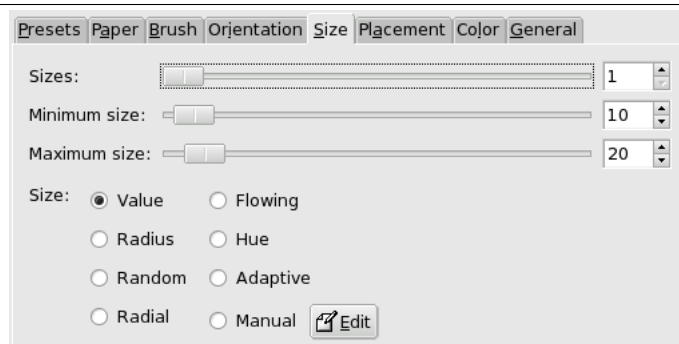
Directions With this option, you can set how many times the brush will pass through a same place, with each time a different direction, resulting in a more and more thick paint.

Start Angle Specifies the general direction of the strokes, the angle that the angle range will start from. Directions are often chosen to give some movement to the image.

Angle Span Specifies the angle, the sector, of the stroke “fan”.

Orientation Specifies the direction of the brush strokes.

- **Value:** Let the Value (luminosity) of the region determine the direction of the stroke.
- **Radius :** The distance from the center of the image determines the direction of the stroke.
- **Random :** Select a random direction for each stroke.
- **Radial :** Let the direction from the center determine the direction of the stroke.
- **Flowing :** Not a direction question here: the strokes follow a “flowing” pattern.
- **Hue :** Let the hue of the region determine the direction of the stroke.
- **Adaptive :** The brush direction that matches the original image the closest is selected.
- **Manual :** The **Edit** button opens the **Edit orientation Map dialog** that allows you to set the directions manually.

Figure 11.88. “Size” tab options**Size tab**

This tab allows you to set the number of brush sizes that will be used to paint, the limits of variation of these sizes and the criterion used to determine them.

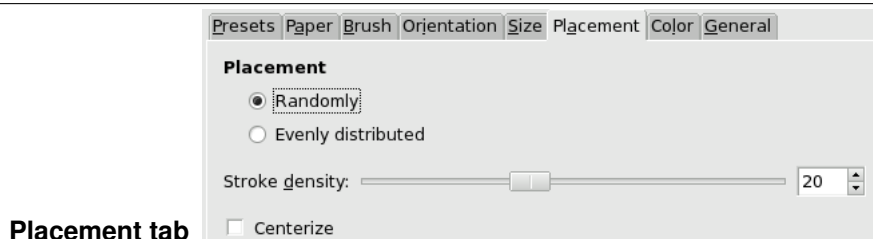
Three Sliders You can specify how many brush sizes are to be used and their sizes.

- **Sizes:** The number of brush sizes to use.
- **Minimum Size** and **Maximum Size:** The brush sizes are between these two values. Greater the size, greater the length and width of strokes.

Sizes You have there options to specify how the size of strokes will be determined.

- **Value:** Let the Value (luminosity) of the region determine the size of the stroke.
- **Radius :** The distance from the center of the image determines the size of the stroke.
- **Random :** Select a random size for each stroke.
- **Radial :** Let the direction from the center determine the size of the stroke.
- **Flowing :** Not a length question here: the strokes follow a "flowing" pattern.
- **Hue :** Let the hue of the region determine the size of the stroke.
- **Adaptive :** The brush size that matches the original image the closest is selected.
- **Manual :** The **Edit** button opens the **Size Map Editor** That allows you to specify the size of strokes by yourself.

Figure 11.89. "Placement" tab options



In this tab you can set how strokes will be distributed.

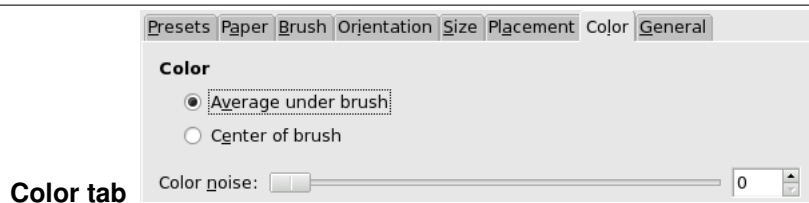
Placement In the preview of the Orientation Map Editor, all small arrows look like a flow around objects. Inside this flow, strokes may be placed in two different ways:

- **Randomly:** Places strokes randomly. This produces a more realistic paint.
- **Evenly:** Strokes are evenly distributed across the image.

Stroke Density The greater the density the closer the strokes. With a low density, the paper or background may be visible in unstroke areas.

Centerize Focus brush strokes around center.

Figure 11.90. "Color" tab options



In this tab, you can set what the stroke color will be.

Color You can set the stroke color in two ways:

- **Average under brush:** Stroke color is computed from the the average of all pixels under the brush.
- **Center of brush:** Samples the color from the pixel in the center of the brush.

Color Noise This slider, and its input box, allow you to introduce noise in the stroke color, that will look less homogenous.

General tab In this tab you can set what will be the background and the relief of brush strokes.

Background

- **Keep Original:** The original image will be used as a background.
- **From Paper:** Copy the texture of the selected paper as a background.
- **Solid:** By clicking on the color dwell you can select a solid colored background.
- **Transparent:** Use a transparent background. Only the painted strokes will be visible. This option is available only if your image has an Alpha channel.

Paint Edges If it is disabled, a thin border will not be painted around the outside border of the image.

Tileable If checked, the resulting image will be seamlessly tileable. The right side will match the left side and the top will match the bottom. This is interesting if your image will be repeatedly used in a Web background.

Drop Shadow Add a shadow effect to each brush stroke.

Edge Darken How much to darken the edges of each brush stroke. This increases paint relief or thickness.

Shadow Darken How much to darken the brush shadow.

Shadow Depth How far apart from the object the drop shadow should be.

Shadow Blur How much to blur the drop shadow.

Deviation Threshold A bail-out value for adaptative selections of brush size.

11.11.6. GIMPressionist- Orientation Map Editor

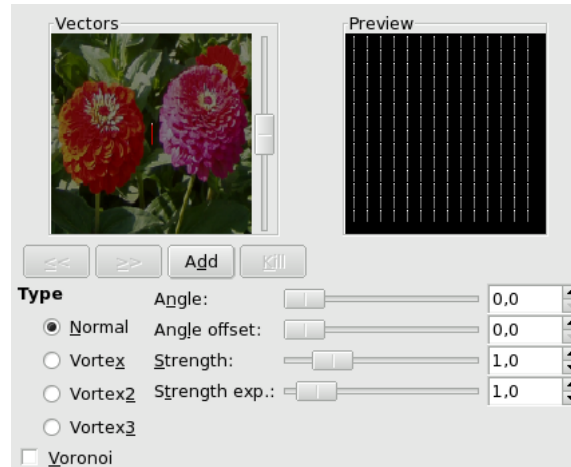
11.11.6.1. Overview

The Orientation-map editor is an annexe of the **GIMPressionist** filter. You can get to it by clicking on the **Edit** button in the "Orientation" tab. With this editor, you can set the direction that brush strokes given by filter will have.

11.11.6.2. Parameter Settings

You can place one or several vectors. You can set their direction and their strength. They will act on the corresponding area of the image.

Vectors In the left windows (Vectors) you can manage your vectors. By default, a vector is at center. Vectors are red when they are active, and grey when they are not with a white point at tip. By

Figure 11.91. Options of the “Orientation-map Editor” dialog

clicking on the **Add** button, you add a vector at center of the window, whereas clicking with the mouse *Middle Button* puts it where you click.

Clicking with the mouse *Left Button* displaces the selected vector to the clicked point.

When clicking with the mouse *Right Button*, the selected vector points to where you have clicked.

Clicking on << and >> buttons displaces focus from a vector to another.

The **Delete** button allows you to delete the selected vector.

TIP

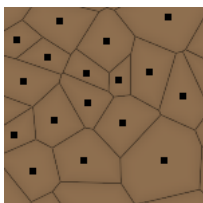


With the scroll bar on the right of the Vectors panel, you can set the image brightness. This can be very useful if the image is very dark/bright and you can't see vectors well.

Preview This Preview gives you an idea of the action of the various vectors.

Type You have there some types to arrange the brush strokes within the selected vector domain. Describing them is difficult, but you can see the result in the Preview.

Voronoi A Voronoi's diagram consists in partitioning a plane with n master points into n polygons where each polygon has only one of these n master points and where any given other point of the polygon is closer to the master point than to any other. So each polygon limit is midway between two master point. Here is an example of a Voronoi's diagram:



Here, when this option is checked, only the vector closest to a given point of the image influences this point.

Angle Angle: Direction of the selected vector. This slider has the same action as right-clicking (see above).

Angle Offset This slider allows you to change the angle of ALL vectors.

Strength This slider acts on the influence domain of the selected vector. This influence lowers with distance. Strength is showed with the vector length.

Strength Exp. This slider acts on the length of ALL vectors, and so changes the strength of all brush strokes.

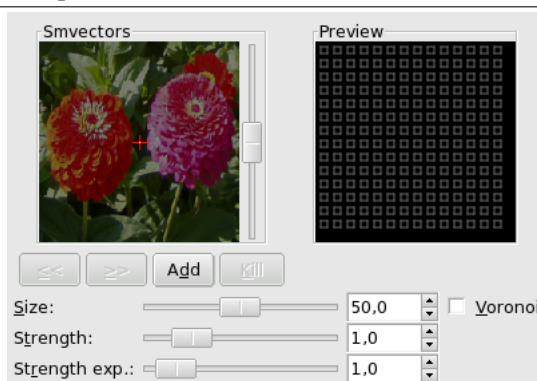
11.11.7. GIMPpressionist- Size Map Editor

11.11.7.1. Overview

The Size-map editor is an annexe of the **GIMPpressionist** filter. You can get to it by clicking on the **Edit** button in the "Size" tab. With this editor, you can set the size that brush strokes given by filter will have.

11.11.7.2. Parameter Settings

Figure 11.92. "Size-map editor options"



You can place one or several vectors. You can set their strength. They will act on the corresponding area of the image.

Smvectors In this window you can place your vectors. By clicking on the **Add** button, you add a vector at the center of the window, whereas clicking with the mouse *Middle Button* puts it where you click. Vectors are red when selected, and gray when they are not, with a white point at tip.

Clicking with the mouse *Left Button* displaces the selected vector to the clicked point.

Clicking on the mouse *Right Button*, has no evident action.

Clicking on << et >> buttons displaces focus from a vector to another.

The **Kill** button allows you to delete the selected vector.

TIP



With the scroll bar on the right of the Vectors panel, you can set the image brightness. This can be very useful if the image is very dark/bright and you can't see vectors well.

Preview This Preview gives you an idea of the action of the different vectors. The size of squares represent the size of the brushes and their strength.

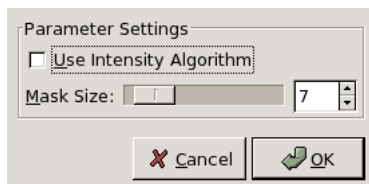
Size Change the size of the brush strokes in the selected vector domain.

Strength This slider acts on the influence domain of the selected vector. This influence lowers with distance.

Strength Exp. Change the exponent of the stroke.

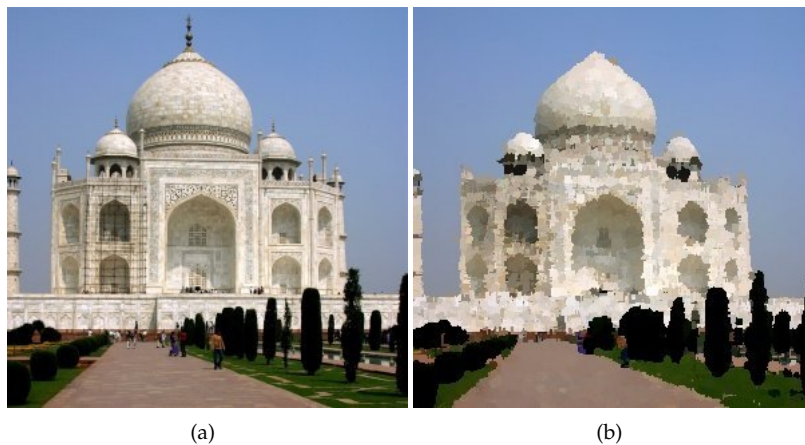
Voronoi See [Orientation Map Editor](#) for explanation

11.11.8. Oilify



11.11.8.1. Overview

Figure 11.93. The same image, before and after applying Oilify filter



This filter is found in **Filters** → **Artistic** → **Oilify...**

This filter makes the image look like an oil painting. The *Mask Size* controls the outcome: a high value gives the image less detail, as if you had used a larger brush.

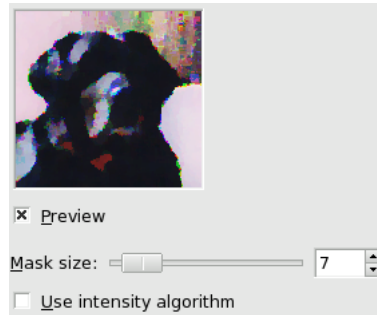
TIP



The Gimpimpressionist filter can produce similar effects, but allows a much wider variety of options.

11.11.8.2. Options

Figure 11.94. “Oilify” filter options Volby filtru “Olejomalba”



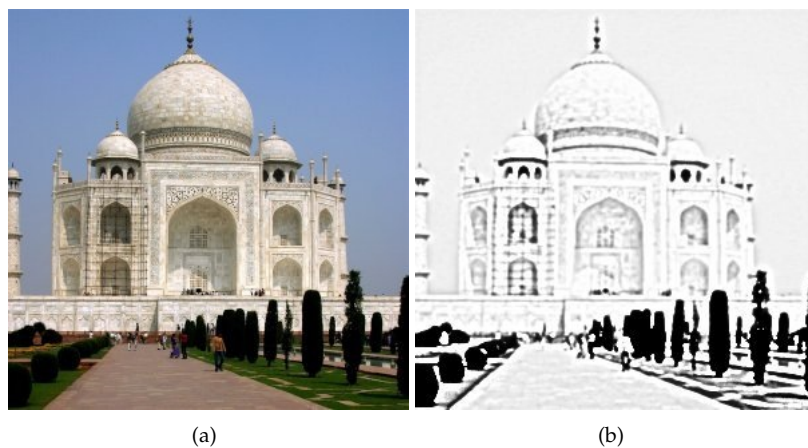
Mask Size Mask Size selects the size of the brush mask used to paint the oily render. Larger values here produce an oilier render.

Use Intensity Algorithm Use Intensity Algorithm changes the mode of operation to help preserve detail and coloring.

11.11.9. Photocopy

11.11.9.1. Overview

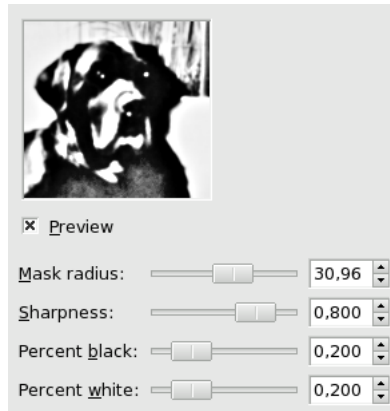
Figure 11.95. The same image, before and after applying Photocopy filter



The Photocopy filter modifies the active layer or selection so that it looks like a black and white photocopy, as if toner transferred was based on the relative darkness of a particular region. This is achieved by darkening areas of the image which are measured to be darker than a neighborhood average, and setting other pixels to white.

11.11.9.2. Starting filter

You can find this filter from the image menu through **Filters** → **Artistic** → **Photocopy**.

Figure 11.96. “Photocopy” filter options

11.11.9.3. Options

Mask radius This parameter controls the size of the pixel neighbourhood over which the average intensity is computed and then compared to each pixel in the neighborhood to decide whether or not to darken it. Large values result in very thick black areas bordering the regions of white and much less detail for black areas. Small values result in less toner overall and more details everywhere.

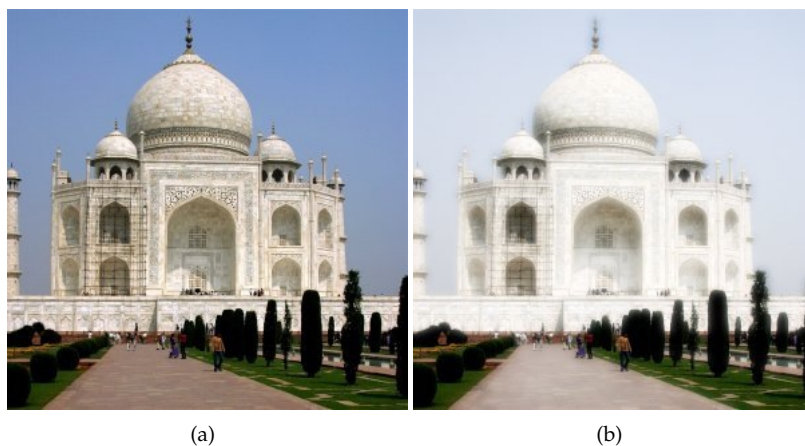
Sharpness With this option, you can set photocopy sharpness, from 0.0 to 1.0.

Percent black This parameter controls the amount of black color added to the image. Small values make the blend from color regions to blackened areas smoother and dark lines themselves thinner and less noticeable. Larger values make the lines thicker, darker and sharper. The maximum value makes the lines aliased. The best, most natural results are usually achieved with an intermediate value. Values vary from 0.0 to 1.0.

Percent White This parameter increases white pixels percentage.

11.11.10. Soft Glow

11.11.10.1. Mode of action

Figure 11.97. The same image, before and after applying SoftGlow filter

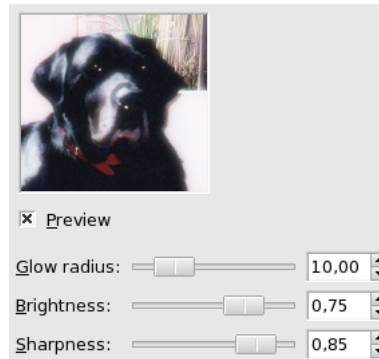
This filter lights the image with a soft glow. Soft Glow produces this effect by making bright areas of the image brighter.

11.11.10.2. Starting filter

You can find this filter in the Image menu: **Filters** → **Atistic** → **Soft Glow**.

11.11.10.3. Options

Figure 11.98. “Soft Glow” filter options



Glow radius The glow radius parameter controls the sharpness of the effect, giving a “vaseline-on-the-lens” effect.

Brightness The brightness parameter controls the degree of intensification applied to image highlights.

Sharpness The sharpness parameter controls how defined or alternatively diffuse the glow effect should be.

11.12. Map filters

11.12.1. Map filters introduction

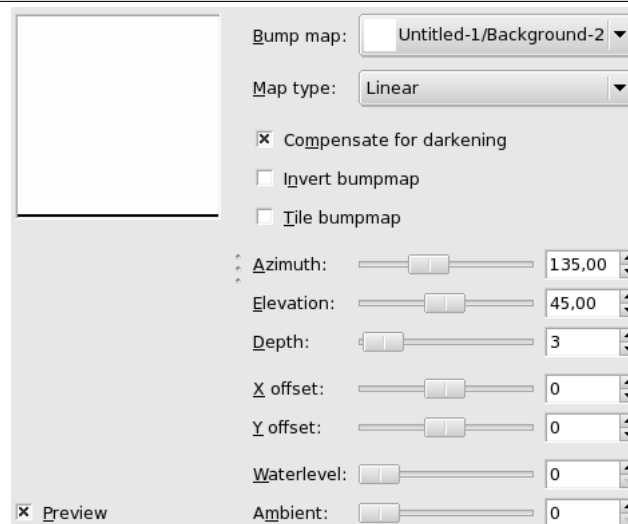
Map filters use an object named *map* to modify an image: you map the image to the object. So, you can create 3D effects by mapping your image to another previously embossed image (“Bumpmap” Filter) or to a sphere (“Map Object” filter). You can also map a part of the image elsewhere into the same image (“Illusion” and “Make Seamless” filters), bend a text along a curve (“Displace” filter)...

11.12.2. Bump Map

11.12.2.1. Overview

This filter is found in the image window menu under **Filters** → **Map** → **Bump Map**.

This filter creates a 3D effect by embossing an image (the card) and then mapping it to another image. Bump height depends on pixel luminosity and you can set light direction. See **Emboss** for more informations about embossing. You can bump map any type of image, unlike the Emboss filter.

Figure 11.99. “Bump Map” filter options

11.12.2.2. Options

Bump Map This drop-down list allows you to select the image that will be used as a map for bumpmapping. This list contains images that are present on your screen when you launch the filter. Images opened after starting filter are not present in this list.

Map Type This option allows you to define the method that will be used when creating the map image:

- **Linear:** bump height is a direct function of luminosity.
- **Sinusoidal:** bump height is a sinusoidal function of luminosity.
- **Spheric:** bump height is a spheric function of luminosity.

Compensate for darkening Bumpmapping tends to darken image. You can compensate this darkening by checking this option.

Invert Bumpmap Bright pixels default to bumps and dark pixels to hollows. You can invert this effect by checking this option.

Tile bumpmap If you check this option, there will be no relief break if you use your image as a pattern for a web page: patterns will be placed side by side without any visible joins.

Azimuth Azimut: This is about lighting according to the points of the compass (0 - 360). If you suppose South is at the top of your image, then East (0°) is on the left. Increasing value goes counter-clockwise.

Elevation Elevation: That's height from horizon (0°), in principle up to zenith (90°), but here up to the opposite horizon (180°).

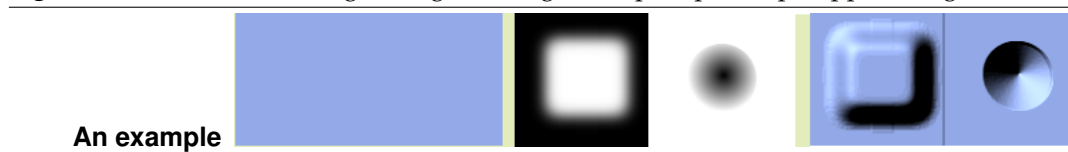
Depth With this slider, you can vary bump height and hollow depth. The higher the value, the higher the difference between both. Values vary from 0 to 100.

X/Y offsets With this slider, you can adjust the map image position compared with the image, horizontally (X) and/or vertically (Y).

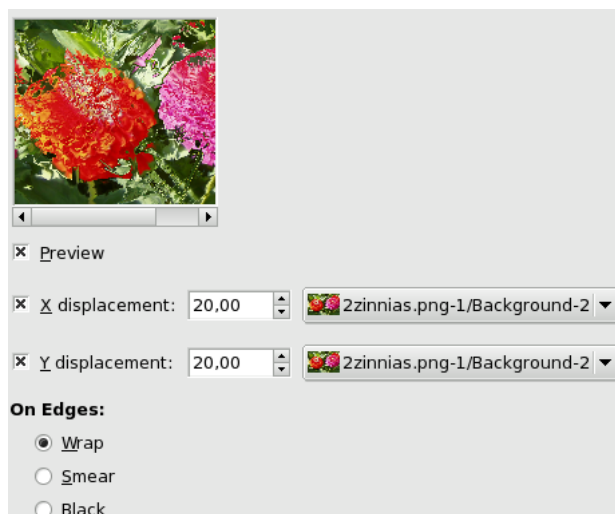
Sea Level If your image has transparent areas, they will be treated like dark areas and will appear as hollows after bumpmapping. With this slider, you can reduce hollows as if sea level was raising. This hollows will disappear when sea level value reaches 255. If the Invert Bumpmap option is checked, transparent areas will be treated as bright areas, and then Sea Level slider will plane bumps down.

Ambient This slider controls the intensity of ambient light. With high values, shadows will fade and relief lessen.

Figure 11.100. From left to right: original image, bump map, bumpmapped image



11.12.3. Displace



11.12.3.1. Overview

You can find this filter from the image menu **Filters** → **M** → **Displace**

This filter uses a 'displace-map' to displace corresponding pixels of the image. This filter displaces the content of the specified drawable (active layer or selection) by the amounts specified in X and Y Displacement multiplied by the intensity of the corresponding pixel in the 'displace map' drawables. **Both X and Y displace maps must be gray-scale images and have the same size as the drawable**. This filter allows interesting distortion effects.

11.12.3.2. Options

Preview Uncheck this option if your processor is slow.

X/Y Displacements When you select one or both options, active layer pixels corresponding to pixels different from 128 in displacement map, will be displaced horizontally (X) or/and vertically (Y).

Why 128 ? Because map, that must be grey-level, has 256 gray levels: 128 intensity corresponds to *medium gray* (R128, V128, B128). Filter displaces image pixels, corresponding to *pixels higher than 128* in map, to the left for X and upwards for Y. Likewise, filter displaces image pixels, corresponding to *pixels lesser than 128* in map, to the right for X and downwards for Y.

Input boxes “X/Y Displacement” should be called *X/Y Displacement Coefficient*. What you enter in input boxes, directly or by using arrow-head buttons, is not the actual displacement. This coefficient is used in a **displacement = (intensity x coefficient) /128** formula which gives the pixel actual displacement according to the intensity of the corresponding pixel in map, modulated by the coefficient you enter. Introducing intensity into formula is important: this allows progressive displacement by using a gradient map.

This value varies in limits equal to image dimensions double. That corresponds to maximum displacement, from an image edge to the other.

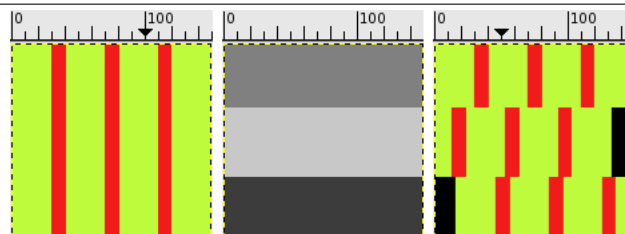
This value may be positive or negative. A negative displacement is reverse of a positive one.

To complicate stuff, intensity used in formula is not directly pixel intensity. Actual intensity is plotted on a -128 +128 scale, where 0 corresponds to null displacement as we have seen higher. Transformation is done by subtracting 128 from the pixel intensity and adding +1. So, in previous example, 75 associated to a white pixel (value 255 reported to $255-128+1=128$) gives a $(128*75)/128=75$ pixels displacement. And a black (0) pixel gives a -75 pixels displacement.

Selecting displacement maps When you click on the drop-down list button, a list appears where you can select a displacement map. To be present in this list, an image must respect two conditions. First, this image must be present on your screen when you call filter. Then, this image must have the same dimensions as the original image. Most often, it will be a duplicate original image, which is transformed to grey scale and modified appropriately, with a gradient. It may be possible to use RGB images, but color luminosity is used making result prevision difficult. Map may be different in horizontal and vertical directions.

Map gradient must be horizontal for a vertical displacement, and vertical for a horizontal displacement.

Figure 11.101. Displacement examples. X displacement coefficient is 30 (with a negative coefficient displacement would be inverse). Vacated pixels are black. Displacement map has three grey stripes, from top to bottom: medium gray (128), light gray 200, dark gray (60). You can see that the image area corresponding to medium gray in map was not displaced. The image area corresponding to light gray (>128) was displaced 17 pixels to the left. The image area corresponding to dark gray (<128) was displaced -15 pixels, to the right.



On Edges These options allow you to set displacement behaviour on active layer or selection edges:

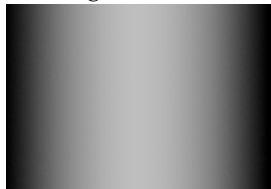
- **Wrap.** With this option, what disappears on one edge reappears on the opposite edge.
- **Smear.** With this option, pixels vacated by displacement are replaced with pixels stretched from the adjacent part of the image.
- **Black.** With this option, pixels vacated by displacement are replaced with black.

11.12.3.3. Using gradient to bend a text

Follow following steps:

1. Start with opening your image.
2. Duplicate this image. Activate this duplicate and make it gray-scaled (<IMAGE>/Image/Mode/GrayScale). Fill it with the wanted gradient. This image will be your *Displacement map*, with the dimensions of

original image.



3. Activate original image. Create a *Text Layer* with your text. Set layer to image size: right-click on the layer in layer dialog and, in the pop-menu, click on "Layer to image size". Note that letters in text layer lie on transparent background; now this filter doesn't displace transparent pixels. Only

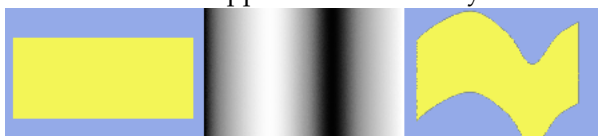


letters will be displaced.

4. Activate text layer. Open Displace filter window. Set parameters particularly displacement coefficient according to the result in Preview. OK.



This method also applies to standard layers:



NOTE



To get the wanted gradient, first draw a black to white gradient. Then use the **Curves** tool to modify the gradient curve.

11.12.4. Fractal Trace

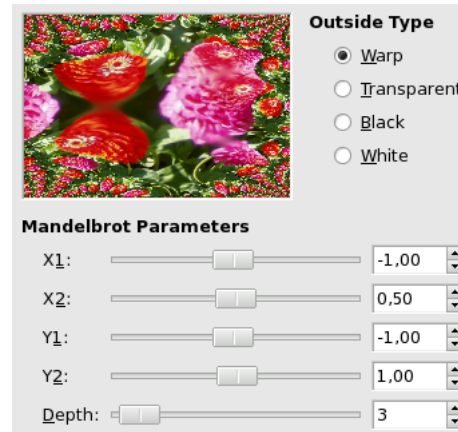
11.12.4.1. Overview

This filter transforms the image with the Mandelbrot fractal: it maps the image to the fractal.

You get to this filter via the Image menu through **Filters** → **Map** → **Fractal trace**

11.12.4.2. Options

MANDELBROT PARAMETERS

Figure 11.102. “Fractal trace” filter options

X1, X2, Y1, Y2, Depth These parameters are similar to X/YMIN, X/YMAX and ITER parameters of the **Fractal Explorer** filter. They allow you to vary fractal spreading and detail depth.

Outside type Mapping image to fractal may reveal empty areas. You can select to fill them with **Black**, **White**, **Transparency** or make what disappears on one side reappear on the opposite side with **Wrap** option.

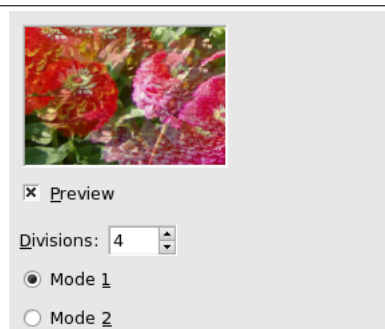
11.12.5. Illusion

11.12.5.1. Overview

This filter is found in the image window menu under **Filters** → **Map** → **Illusion**.

With this filter, your image (active layer or selection) looks like a kaleidoscope. This filter duplicates your image in many copies, more or less dimmed and split, and puts them around center of image.

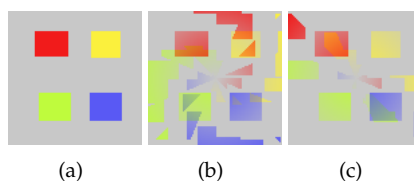
11.12.5.2. Options

Figure 11.103. “Illusion” filter options

Divisions That's the number of copies you want to apply to image. This value varies from -34 to 64. Negative values invert kaleidoscope rotation.

Modes You have two arrangement modes for copies in image:

Figure 11.104. From left to right: original image, mode 1, mode 2, with Divisions=4



11.12.6. Make Seamless

11.12.6.1. Overview

Figure 11.105. An example of Make Seamless.



You can find this filter in image menu under **Filters** → **Map** → **Make Seamless**

This filter modifies the image for tiling by creating seamless edges. Such an image can be used as a pattern for a web-page. This filter has no option, and result may need correction.

11.12.7. Map Object

11.12.7.1. Overview

This filter maps a picture to an object (plane, sphere, box or cylinder).

This filter is found in the image window menu under **Filters** → **Map** → **Map Object**.

11.12.7.2. Preview domain

This preview has several possibilities:

Preview! Preview!: Preview is automatic for some options but you will have to press this button to update Preview after modifying many other parameters.

When mouse pointer is on Preview, it takes the form of a small hand to grab the *blue point* which marks light source origin and to displace it. This blue point may not be visible if light source has negative X and Y settings in Light tab.

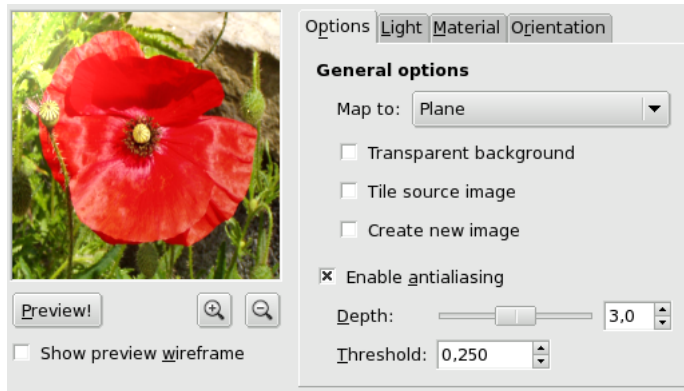
Zoom buttons **Zoom buttons** allow you to enlarge or to reduce image in Preview. Their action is limited, but may be useful in case of a large image.

Show Preview Wireframe **Show Preview Wireframe:** No comment.

11.12.7.3. General Options tab

Map to This drop-down list allows you to select the object the image will be mapped on. It can be a *Plane*, a *Sphere*, a *Box* or a *Cylinder*.

Transparent background This option makes image transparent around object.

Figure 11.106. “Map Object” general options tab

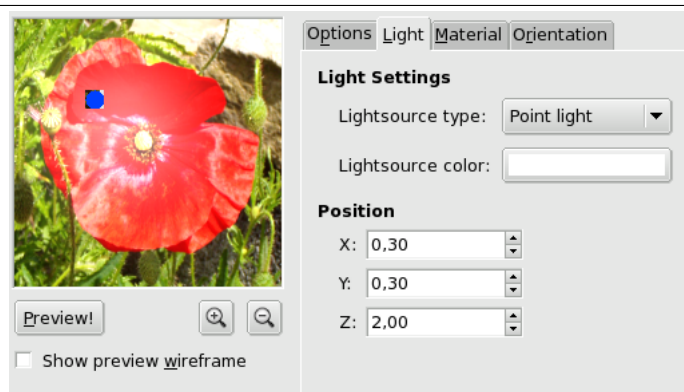
Tile source image When moving Plane object and displacing it with Orientation tab options, a part of the image turns empty. By checking the **Tile source image**, source image copies will fill this empty space in. This option seems not to work with the other objects.

Create new image When this option is checked, a new image is created with the result of filter application, so preserving the original image.

Enable antialiasing Check this option to conceal this unpleasant aliasing effect on borders. When checked, this option lets appear two settings:

- **Depth:** Defines antialiasing quality, to the detriment of execution speed.
- Threshold:** Defines antialiasing limits. Antialiasing stops when value difference between pixels becomes lower than this set value.

11.12.7.4. Light tab

Figure 11.107. “Light” tab options

Light Settings Lightsource type: In this dropdown list, you can select among *Point light*, *Directionnal light* and *No light*.

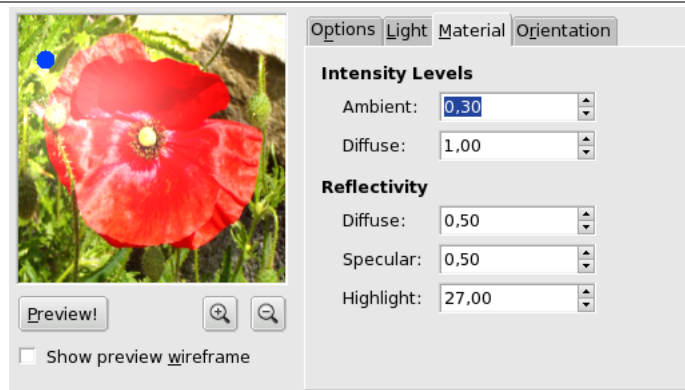
Lightsource color: Press this button to open the Color Selector dialog.

Position / Direction vector If "Point light" is selected, you can control there light source *Position* (the blue point), according to X, Y and Z coordinates. These three values range from -1.00 to 1.00.

If "Directionnall light" is selected, these X, Y and Z parameters controle the "Direction vector" (effect is not evident).

11.12.7.5. Material tab

Figure 11.108. "Material" tab options



Intensity Levels Ambient: Amount of color to show where no light falls.

Diffuse: Intensity of original color when lit by a light source.

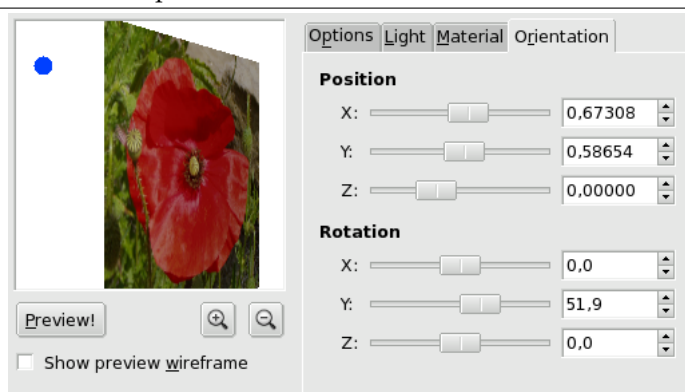
Reflectivity Diffusion: Higher values make object reflect more light (looks brighter).

Specular: Controls how intense the highlights will be.

Highlight: Higher values make the highlights more focused.

11.12.7.6. Orientation tab

Figure 11.109. "Orientation" tab options



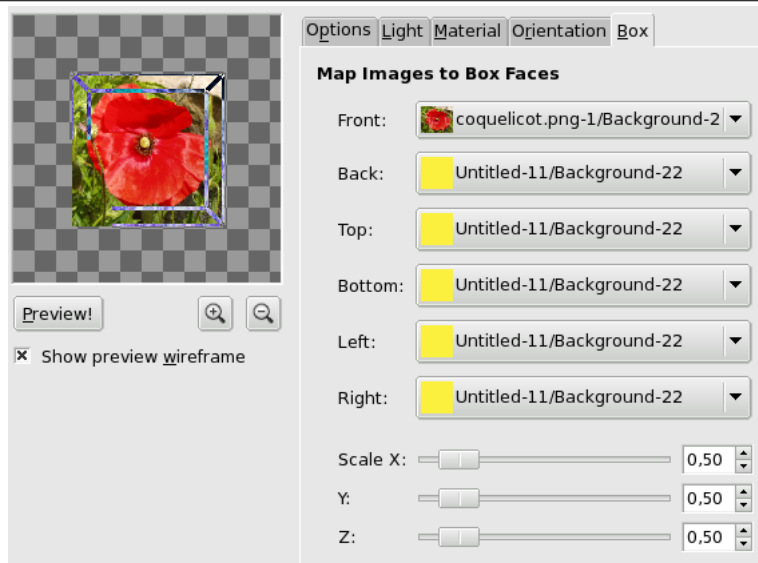
Position These three sliders and their input boxes allows you to vary object position in image, according to the X, Y, Z coordinates of the object upper left corner.

Rotation These three sliders make the object rotate around X, Y, Z axes respectively.

11.12.7.7. Box tab

This tab appears only when you select the Box object.

Figure 11.110. “Box” tab options



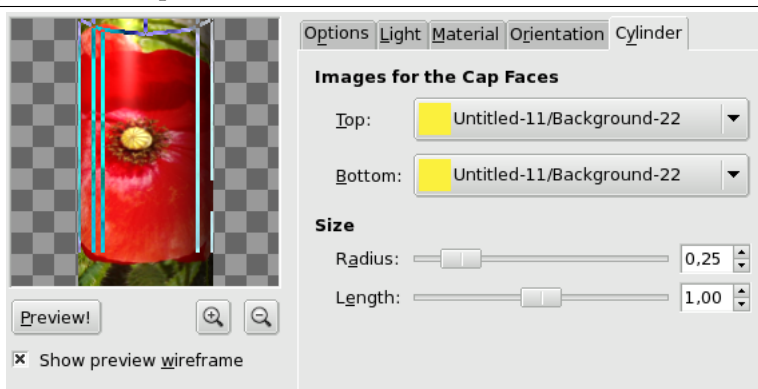
Match Images to Box Faces This function name is self explanatory: you can select an image for every face of the box. These images must be present on your screen when you call the Map Object filter.

Scale These X, Y, Z three sliders allow you to change the size of every X, Y, Z dimension of the box.

11.12.7.8. Cylinder tab

This tab appears only when you select the Cylinder object.

Figure 11.111. “Cylinder” tab options



Images for the Cap Faces The name of this option is self-explanatory. Images must be present on your screen when you call the Map Object filter.

Scale radius: This slider and its input boxes allow you to control the Cylinder diameter. Unfortunately, this setting works on the image mapped onto the cylinder and resamples this image to adapt it

to the new cylinder size. It would be better to have the possibility of setting size cylinder before mapping so that we could map a whole image.

Length: Controls cylinder length...

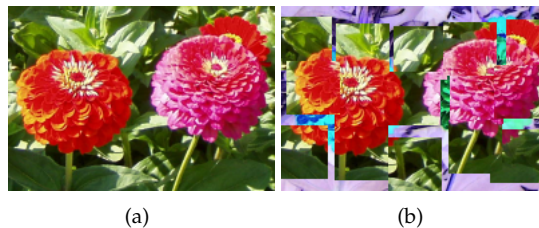
11.12.8. Paper Tile

11.12.8.1. Overview

This filter is found in the image window menu under **Filters** → **Map** → **Paper Tile**.

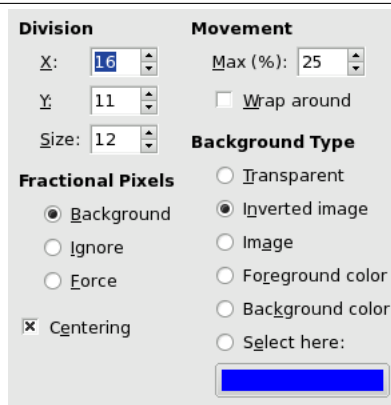
This filter cuts the image (active layer or selection) into several pieces, with square form, and then slides them so that they, more or less, overlap or move apart. They can go out image borders a little.

Figure 11.112. From left to right: original image, after applying “Paper Tile” filter (division = 5)



11.12.8.2. Options

Figure 11.113. “Paper Tile” filter options



Division X, Y and Size parameters are linked, because filter starts cutting image before it displaces pieces; so, piece size and number of pieces in horizontal (X) and vertical (Y) directions must be convenient to image size.

Movement Max% is the maximum displacement percentage against side size of squares.

Wrap around: As tiles move, some can go out image borders. If this option is checked, what goes out on one side goes in on the opposite side.

Fractional Pixels Because of image cutting, original pixels can persist. There are three ways treating them:

- **Background:** Remaining pixels will be replaced with the background type defined in the following section.

- **Ignore:** Background Type option is not taken into account and remaining pixels are kept.
- **Force:** Remaining pixels will be cut also.

Background Type You can select the background type that will be used, if the **Background** radio-button is checked, among six options:

- **Transparent:** Background will be transparent.
- **Inverted image:** Background colors will be inverted (255-value in every color channel).
- **Foreground Color:** Remaining pixels will be replaced by the Foreground color of Toolbox.
- **Background Color:** Remaining pixels will be replaced by the Background color of Toolbox.
- **Select here:** When this radio-button is checked, clicking in the color dwell will open a Color Selector where you can select the color you want for background.

Centering If this option is checked, tiles will rather be gathered together in center of the image.

11.12.9. Small Tiles

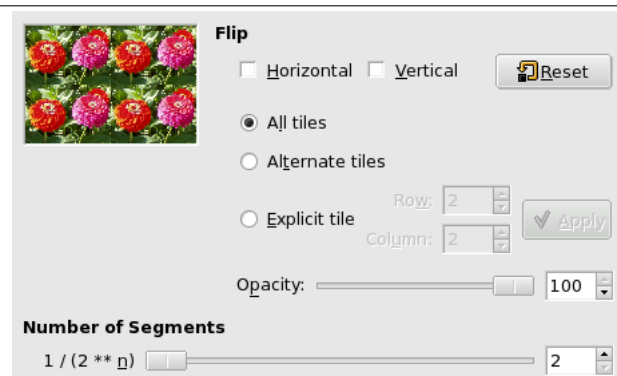
11.12.9.1. Overview

This filter is found in the image window menu under **Filters** → **Map** → **Small Tiles**.

This filter reduces the image (active layer or selection) and displays it in many copies inside the original image.

11.12.9.2. Options

Figure 11.114. “Small Tiles” filter options



Number of Segments $1/(2*n)$ means “the image into $2*n$ tiles” where “ n ” is the number you set with the slider or its input box. $n = 3$ will make six tiles in the image.

Opacity With this slider and its input box, you can set the opacity of the resulting image. This option is valid only if your image has an Alpha channel.

Flip You can flip tiles according to the **Horizontal** or/and **Vertical** axis by checking the corresponding option(s).

You can also decide which tiles will be flipped:

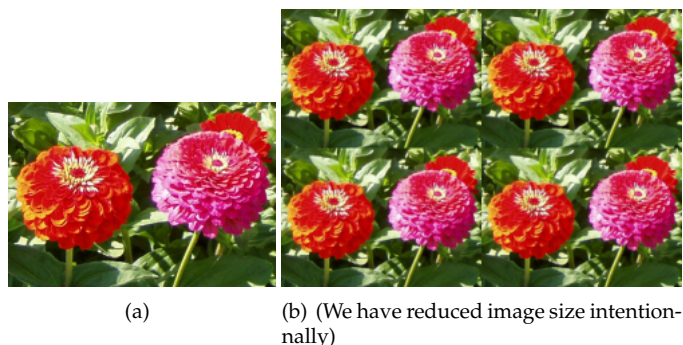
- **All tiles:** no comment.

- **Alternate tiles:** only odd tiles will be flipped.
- **Explicit tile:** you can define, a particular tile by using both **Line** and **Column** input boxes. This tile will be marked with a box in Preview.

11.12.10. Tile

11.12.10.1. Overview

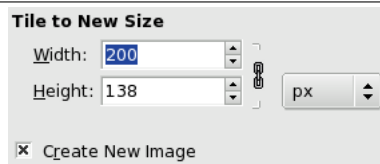
Figure 11.115. The same image, before and after applying Tile filter. (We have reduced image size intentionally)



This filter is found in the image window menu under **Filters** → **Map** → **Tile**.

This filter makes several copies of the original image, in a same or reduced size, into a bigger (new) image.

Figure 11.116. “Tile” filter options



TILE TO NEW SIZE

Width/Height Input boxes and their arrow-heads allow you to enter you want for the new image. Both directions are linked by default with a chain; you can make them independant by breaking this chain. You can choose a unit else than pixel by clicking on the drop-down list button.

The new image must be bigger than the original one. Else, you will get an image sample only. Choose sizes that are multiple of original sizes if you don't want to have truncated tiles.

Create New image It's in your interest to keep this option checked to avoid modifying your original image.

11.12.11. Warp

11.12.11.1. Overview

This filter is found in the image window menu under **Filters** → **Map** → **Warp**. This filter has no Preview.

This filter displaces pixels of active layer or selection according to grey levels of a *Displacement map*. Pixels are displaced according to the gradient slope in the displacement map. Pixels corresponding to solid areas are not displaced; the higher the slope, the higher the displacement.

This filter offers the possibility of masking a part of the image to protect it against filter action.

Figure 11.117. From left to right: original image, displace map, displaced image. Solid areas of displacement map lead to no displacement. Abrupt transitions give an important displacement. A linear gradient gives a regular displacement. Displacement direction is perpendicular to gradient direction (angle = 90°)



Figure 11.118. With a non-linear gradient. A non-linear gradient leads to curls.



11.12.11.2. Options

BASIC OPTIONS

Step Size “Step” is displacement distance for every filter iteration. A 10 value is necessary to get a one pixel displacement. This value can be negative to invert displacement direction.

Iterations Iteration is the number of repetitions of effect when applying filter.

On Edges Because of displacement, a part of pixels are driven over the borders of layer or selection, and, on the opposite side, pixels places are emptying. Four following options allow you to fix this issue:

- **Warp** (default): What goes out on one side is going into the opposite side.
- **Smear**: Emptying places are filled with a spreading of the neighbouring image line.
- **Black**: Emptying places are filled with black color.
- **FG Color**: Emptying places are filled with the Foreground color of the color area in Toolbox.

Displacement Map To be listed in this drop-down list, the displacement map, which is a grey-scaled image, must be *present on your screen when you call filter and must have the same size as the original image*. be

ADVANCED OPTIONS

Dither Size Once all pixels displaced, this option scatters them randomly, giving grain to the image. The higher this value (0.00-1.00), the thinner the grain.

Figure 11.119. With a complex gradient:.. And a complex gradient, such as the **Solid Noise** filter can create, gives a swirl effect.

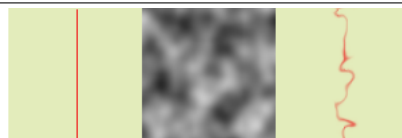
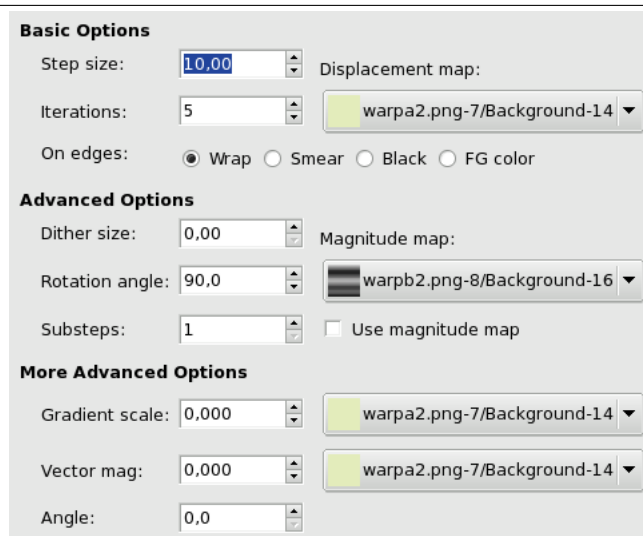
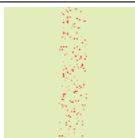
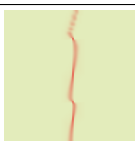


Figure 11.120. Warp filter options**Figure 11.121.** With a 3.00 dither size:

Rotation Angle This option sets displacement angle of pixels according to the slope direction of gradient. Previous examples have been created with a vertical gradient and a 90° angle: so, pixels were displaced horizontally and nothing went out of the image borders. Here is an example with a 10° angle and 6 iterations:

Figure 11.122. With a 10° angle and 6 iterations:. Displacement is made according to a 10° angle against vertical. Pixels going out the lower border on every iteration are going into through the upper border (Wrap option checked), giving a dotted line.



Magnitude map In addition to displacement map, you can add a **Magnitude Map**. This map is also a grey-scaled image, with the same size as the source image and which must be present on your screen when you call filter. This map gives more or less strength to filter on some parts of the image, according to the grey levels of this magnitude map. Image areas corresponding to white parts of this map will undergo all the strength of filter. Image areas corresponding to black parts of the map will be spared by filter. Intermediate grey levels will lessen filter action on corresponding areas of the image. **Use magnitude map** must be checked for that.

11.12.12. Van Gogh (LIC)

11.12.12.1. Overview

This filter is found in the image window menu under **Filters** → **Map** → **Van Gogh (LIC)**.

Figure 11.123. Magnitude Map example:. From left to right: original image, displacement map, magnitude map, after applying “Warp” filter. You can see that the black areas of magnitude map prevent filter to take action.



“LIC” stands for Line Integral Convolution, a mathematical method. Plug-in author uses mathematical terms to name his options... This filter is used to apply a directional blur to an image, or to create textures. It could be called “Astigmatism” as it blurs certain directions in the image.

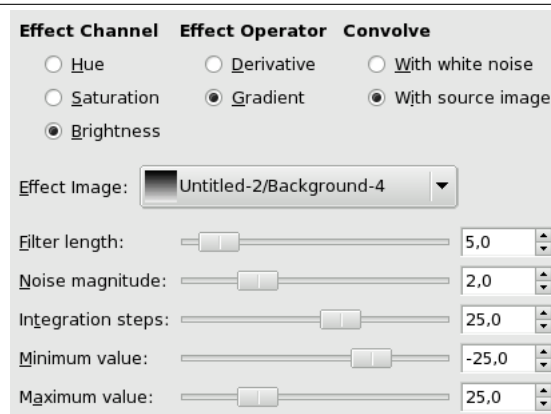
It uses a blur map. Unlike other maps, this filter doesn’t use grey levels of this blur map. *Filter takes in account only gradient direction(s).* Image pixels corresponding to solid areas of the map are ignored.

Figure 11.124. From left to right: original image, map, resulting image. Map has three strips: a solid black area, a vertical gradient area, a solid white area. One can see, on the resulting image, that image zones corresponding to solid areas of the map, are not blurred. Only the image zone corresponding to the gradient area of the map is blurred.



11.12.12.2. Options

Figure 11.125. “Van Gogh (LIC)” filter options



NOTE



- To create a blur, check **With Source Image**. Only Filter Length slider and perhaps Integration Steps slider, are useful.
- To create a texture, check **With White Noise**. All sliders can be useful.

Convolution You can use two types of convolution. That’s the first parameter you have to set:

- **With White Noise:** White Noise is an acoustics name. It's a noise where all frequencies have the same amplitude. Here, this option is used to create patterns.
- **With Source Image:** The source image will be blurred.

Effect Image That's the map for blur or pattern direction. This map must have the same dimensions as the original image. It must be preferably a grayscale image. It must be present on your screen when you call filter so that you can choose it in the drop-list.

Figure 11.126. Blurring with vertical gradient map. With a vertical gradient map, vertical lines are blurred.



Figure 11.127. Blurring with a square gradient map. The gradient map is divided into four gradient triangles: each of them has its own gradient direction. In every area of the image corresponding to gradient triangles, only lines with the same direction as gradient are blurred.

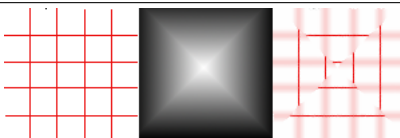
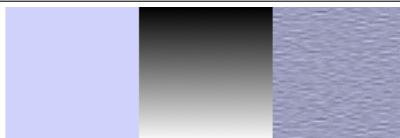


Figure 11.128. Texture example. The "With white noise" option is checked. Others are default. With a vertical gradient map, texture "fibres" are going horizontally.



Effect Channel By selecting **Hue**, **Saturation** or **Brightness (=Value)**, filter will use this channel to treat image

Effect Operator The "Derivative" option reverses "Gradient" direction:

Filter Length When applying blur, this option controls how important blur is. When creating a texture, it controls how rough texture is: low values result in smooth surface; high values in rough surface.

Noise Magnitude This options controls the amount and size of White Noise. Low values produce finely grained surfaces. High values produce coarse-grained textures.

Integration Steps This options controls the influence of gradient map on texture.

Minimum/Maximum values Both values determine a range controlling texture contrast: shrinked range results in high contrast and enlarged range results in low contrast.

Figure 11.129. Derivative option example. Using a square gradient map, Effect operator is on "Gradient" on the left, on "Derivative" on the right: what was sharp is blurred and conversely.

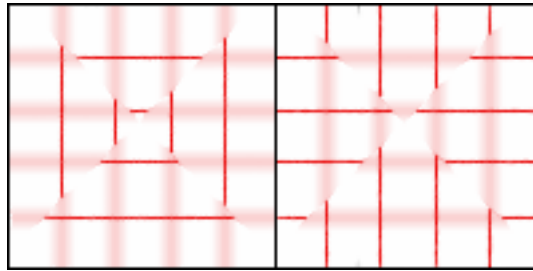
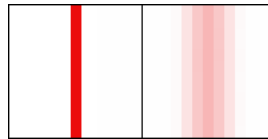


Figure 11.130. Action example of Filter Length on blur. On the left: a vertical line, one pixel wide (zoom 800%). On the right: the same line, after applying a vertical blur with a Filter Length to 3. You can see that blur width is 6 pixels, 3 pixels on both sides.

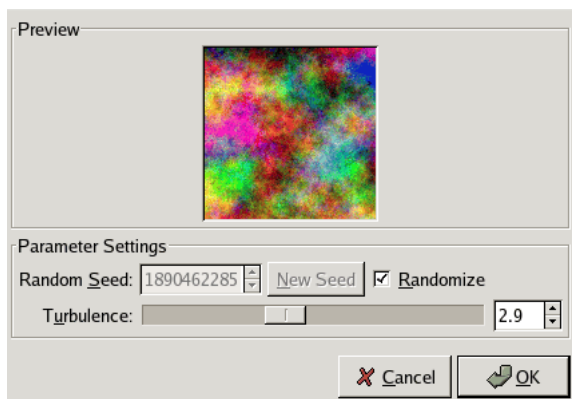


11.13. Rendering filters

11.13.1. Render filters introduction

Most Gimp filters act on a layer by transforming its contents, but the filters in the "Render" group are a bit different. They create patterns from scratch, in most cases obliterating anything that was previously in the layer. Some create random or noisy patterns, others regular or fractal patterns, and one (Gfig) is a general-purpose (but rather limited) vector graphics tool.

11.13.2. Plasma



11.13.2.1. Overview

You can find this filter in image menu following **Filters** → **Render** → **Clouds** → **Plasma**

Figure 11.131. Filter Length example on texture. On the left: a texture with Noise Length=3. On the right, the same texture with Noise Length=24.

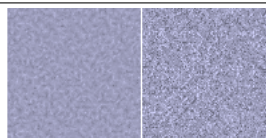


Figure 11.132. Action example of Noise Magnitude on texture. Noise magnitude = 4

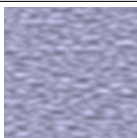
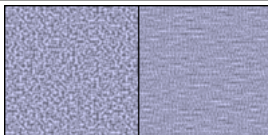


Figure 11.133. Action example of Integration Steps on texture. On the left: Integration Steps = 2. On the right: Integration Steps = 4.



Plasma generates colorful clouds, which can be used for textures. You control the turbulence in the plasma cloud with the Turbulence slide.

All of the colors produced by Plasma are completely saturated. Sometimes the strong colors may be distracting, and a more interesting surface will appear when you desaturate the image using **Layer/Colors/Desaturate**.

NOTE



An enhanced version of the Plasma plug-in, called *Plasma2*, with many more options and parameters, is available from the Gimp Plugin Registry <<http://registry.gimp.org/plugin?id=501>>.

11.13.2.2. Options

Random Seed **Random Seed** controls the randomization element. The **Randomize** check-button will set the seed using the hardware clock of the computer. There is no reason to use anything else unless you want to be able to repeat the exact same pattern of randomization on a later occasion.

Turbulence This parameter controls the complexity of the plasma. High values give a hard feeling to the cloud (like an abstract oil painting or mineral grains), low values produce a softer cloud (like steam, mist or smoke). The range is 0.1 to 7.0.

Figure 11.134. Action example of Min/max values on texture. Minimum value = -4,0. Maximum value = 5,0.

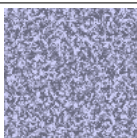
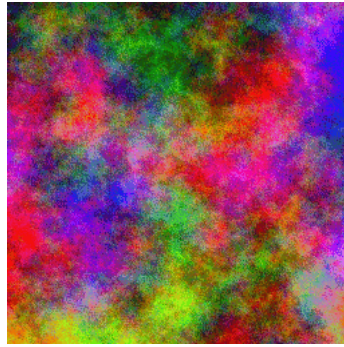
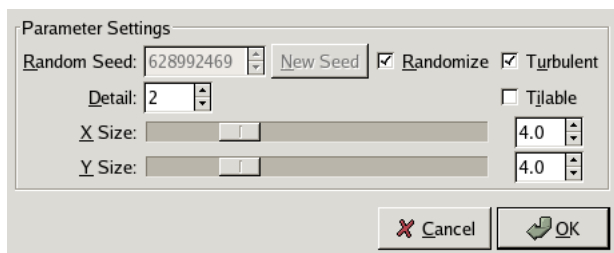
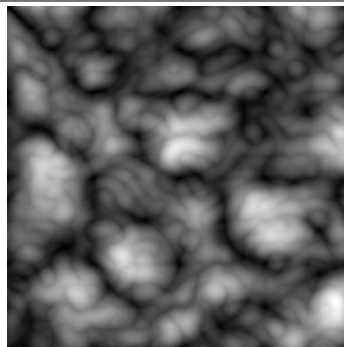


Figure 11.135. Example of a rendered plasma.

11.13.3. Solid Noise



11.13.3.1. Overview

Figure 11.136. Example of turbulent solid noise.

You can find this filter from the image menu through **Filters** → **Render** → **Clouds** → **Solid noise**

Solid Noise is a great texture maker. Note that this noise is always gray, even if you applied it to a very colorful image (it doesn't matter what the original image looks like – this filter completely overwrites any existing background in the layer it is applied to). This is also a good tool for creating displacement maps for the plug-in or for the plug-in. With the "turbulence" setting active, the results look quite a bit like real clouds. An example is shown below.

11.13.3.2. Options

Random Seed **Random Seed** controls random behaviour of the filter. If the same random seed in the same situation is used, the filter produces exactly the same results. A different random seed produces different results. Random seed can be entered manually or generated randomly by pressing **New Seed** button.

When the **Randomize** option is checked, random seed cannot be entered manually, but is randomly generated each time the filter is run. If it is not checked, the filter remembers the last random seed used.

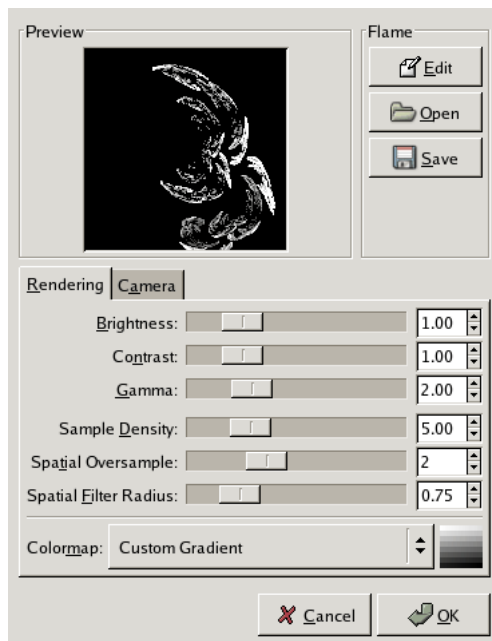
Turbulent If you check this, you'll get very interesting effects, often something that looks much like oil on water, or clouds of smoke, or living tissue, or a Rorschach blot.

Detail This controls the amount of detail in the noise texture. Higher values give a higher level of detail, and the noise seems to be made of spray or small particles, which makes it feel hard. A low value makes it more soft and cloudy.

Tileable If you check Tileable, you'll get a noise which can be used as tiles. For example, you can use it as a background in an HTML page, and the tile edges will be joined seamlessly.

X and Y Size These control the size and proportion of the noise shapes in X (horizontal) and Y (vertical) directions (range 0.1 to 16.0).

11.13.4. Flame



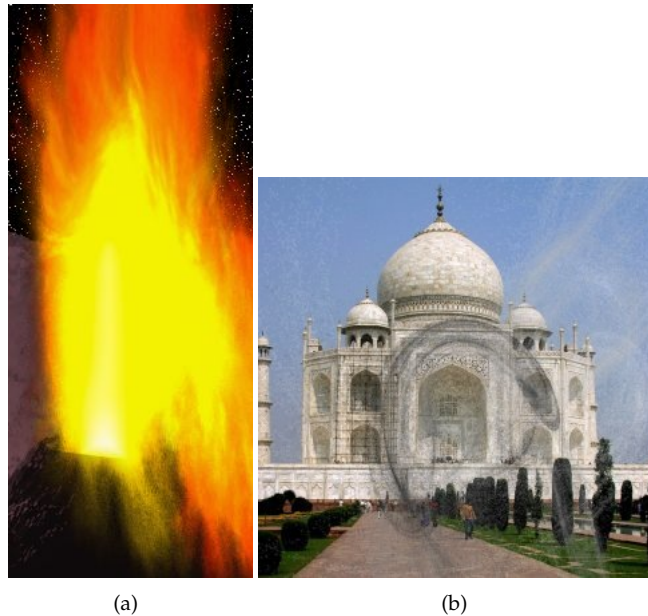
11.13.4.1. Overview

This filter is found in **Filters** → **Render** → **Nature** → **Flame**

With the Flame filter, you can create stunning, randomly generated fractal patterns. You can't control the fractals as you can with the **Ifs Compose** filter, but you can steer the random generator in a certain direction, and choose from variations of a theme you like.

In the main window, you can set Rendering and Camera parameters. The first three parameters in the Render display are Brightness, Contrast and Gamma. The result of these options is visible in the Preview window, but it's generally better to stick to the default values, and correct the rendered image later with Image/Colors.

The other three parameters affect the rendering process and don't show in the preview window. Sample Density, which controls the resolution of the rendered pattern, is the most important of these. The Camera parameters allow you to zoom and offset the flame pattern, until you're happy with what you see in the preview window. Flame also offers the possibility to store and load your favorite patterns.

Figure 11.137. Example of a rendered Flame.

11.13.4.2. Options

Pressing this button brings up the Edit dialog. The dialog shows nine different windows. The pattern displayed in the center is the current pattern, and the eight windows surrounding it are random variations of that pattern. Clicking on the central image creates eight new variations, which can be adjusted with the Speed control. You select a variation by clicking on it, and it instantly replaces the image in the middle. To pick a certain character or theme for the variations, you can choose from nine different themes in the Variations menu. You can also use Randomize, which replaces the current pattern with a new random pattern.

Open This button brings up a file selector that allow you to open a previously saved Flame settings file.

Save This button brings up a file save dialog that allows you to save the current settings for the plug-in, so that you can recreate them later.

Rendering tab

Brightness Controls the brightness of the flame object.

Contrast Controls the contrast between brighter and dimmer parts of the flame.

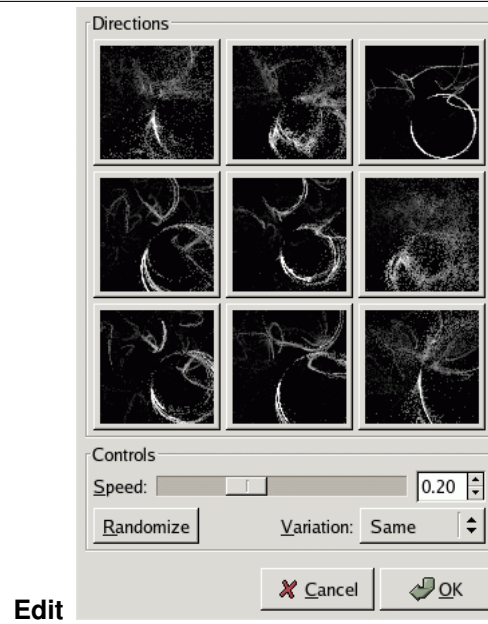
Gamma Sets a gamma correction for parts with intermediate brightness.

Sample Density Controls the resolution of the rendered pattern. (Does not have any effect on the preview.) A high sample density results in soft and smooth rendering (like a spider's web), whereas low density rendering resembles spray or particle clouds.

Spatial Oversample What does this do?

Spatial Filter Radius What does this do?

Colormap This menu gives you several options to set the color blend in the flame pattern:

Figure 11.138. The Edit Flame dialog

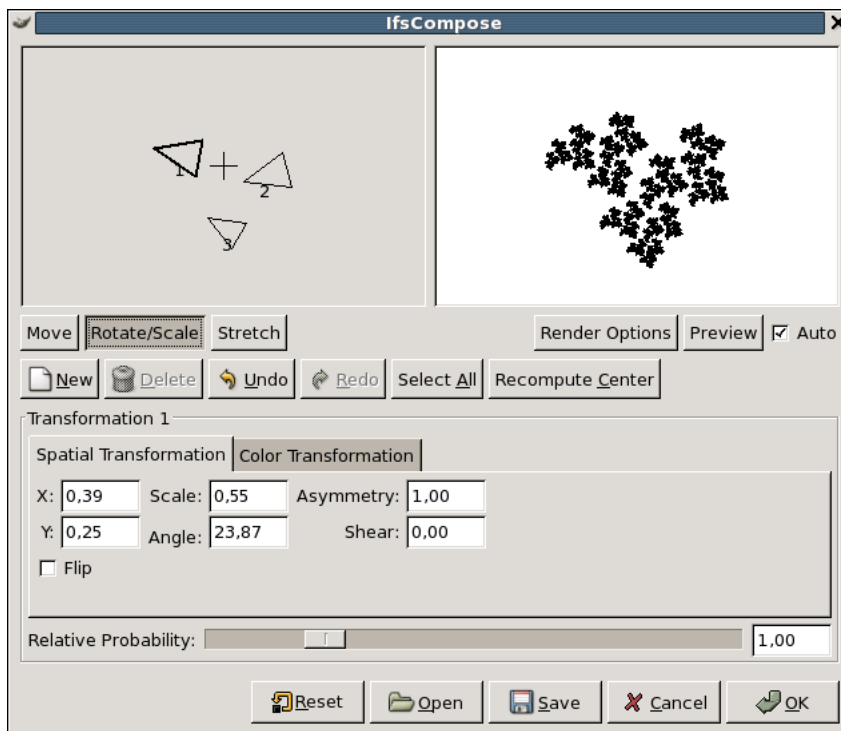
- The current gradient as shown in the Toolbox.
- A number of preset colormaps.
- The colors from images that are presently open in GIMP.

Camera tab

Zoom Allows you to zoom the flame in or out.

X, Y Allows you to move the flame around in the image area.

11.13.5. IFS Compose



11.13.5.1. Overview

This filter is found in **Filters** → **Render** → **Nature** → **IFS fractal**

This fractal-based plug-in is truly wonderful! With this versatile instrument, you can create amazingly naturalistic organic shapes, like leaves, flowers, branches, or even whole trees. ("IFS" stands for "Iterated Function System".)

The key to using this plug-in lies in making very small and precise movements in fractal space. The outcome is always hard to predict, and you have to be extremely gentle when you change the pattern. If you make a component triangle too big, or if you move it too far (even ever so slightly), the preview screen will black out, or more commonly, you'll get stuck with a big shapeless particle cloud.

A word of advice: When you have found a pattern you want to work with, make only small changes, and stick to variations of that pattern. It's all too easy to lose a good thing. Contrary to what you might believe, it's really much easier to create a leaf or a tree with IFS Compose than to make a defined geometrical pattern (where you actually know what you're doing, and end up with the pattern you had in mind).

For a brief introduction to IFS's see Foley and van Dam, et al., *Computer Graphics, Principles and Practice*, 2nd Ed., (Addison Wesley, 1990).

11.13.5.2. Options

The Main Interface The plug-in interface consists of the compose area to the left, a preview screen to the right, and some tabs and option buttons at the bottom of the dialog. The Default setting (in the preview window) is three equilateral triangles. (This gives rise to a fractal pattern called the *Sierpinski Triangle*).

Toolbar Some tools are directly visible in this tool bar: **Move**, **Rotate**, **Stretch**, **New**, **Delete**, **Undo**, **Redo**, **Select All**. You can see others, if your window is not wide enough, by clicking on the drop-down list button on the right of tool bar: **Recenter** and **Render Options** where you have have several parameters:

Render Options

Memory Enables you to speed up rendering time. This is especially useful when working with a large spot radius; just remember to use even multiples of the default value: 4096, 8192, 16384, ...

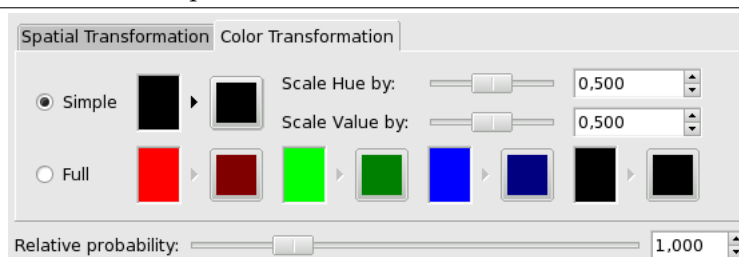
Iterations Determines how many times the fractal will repeat itself. (A high value for Subdivide and Iterations is for obvious reasons a waste of process time unless your image is very large.)

Subdivide Controls the level of detail.

Spot Radius Determines the density of the “brushstrokes” in the rendered image. A low spot radius is good for thin particle clouds or spray, while a high spot radius produces thick, solid color strokes much like watercolor painting. Be careful not to use too much spot radius – it takes a lot of time to render.

Spatial Transformation Gives you information on the active fractal, and allows you to type a value instead of changing it manually. Changing parameters with the mouse isn’t very accurate, so this is a useful option when you need to be exact.

Figure 11.139. “Color transformation” tab options



Color transformation

Simple color transformation Changes the color of the currently selected fractal component (which starts as the foreground color in the toolbox) to a color of your choice.

Full color transformation Like the Simple color transformation but this time you can manage the color transformation for each color channel and for the alpha channel (shown as a black channel).

Scale Hue/Value When you have many fractals with different colors, the colors blend into each other. So even if you set “pure red” for a fractal, it might actually be quite blue in some places, while another “red” fractal might have a lot of yellow in it. Scale Hue/Value changes the color strength of the active fractal, or how influential that fractal’s color should be.

Relative Probability Determines influence or total impact of a certain fractal.

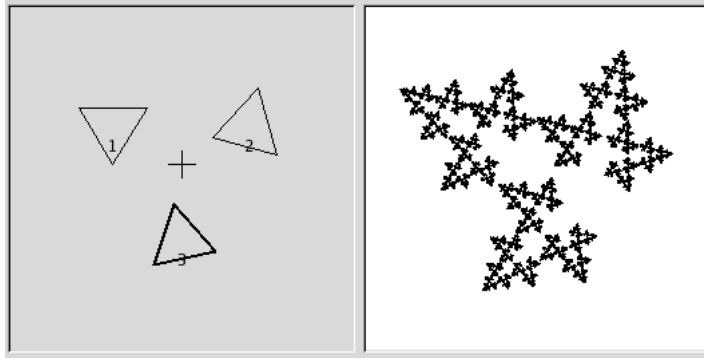
11.13.5.3. A Brief Tutorial

This is a rather complex plug-in, so to help you understand it, we’ll guide you through an example where you’ll create a leaf or branch.

Many forms of life, and especially plants, are built like mathematical fractals, i.e., a shape that reproduces or repeats itself indefinitely into the smallest detail. You can easily reproduce the shape of a leaf or a branch by using four (or more) fractals. Three fractals make up the tip and sides of the leaf, and the fourth represents the stem.

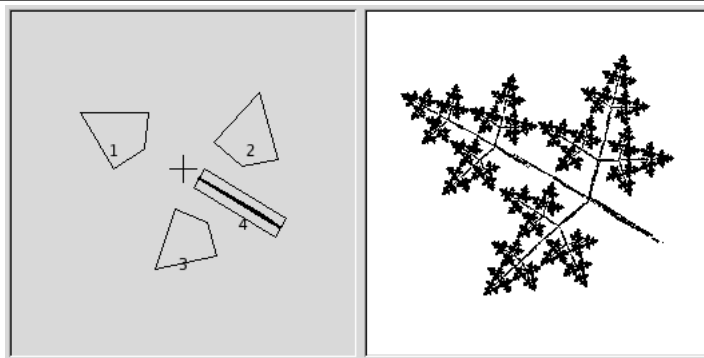
1. Before invoking the filter: Select **File** → **New Image** Add a transparent layer with **Layers** → **Layers and Channels** → **New Layer** Set the foreground color in the toolbox to black, and set the background to white.
2. Open IFS Compose. Start by rotating the right and bottom triangles, so that they point upward. You'll now be able to see the outline of what's going to be the tip and sides of the leaf. (If you have problems, it may help to know that the three vertices of a triangle are not equivalent.)

Figure 11.140. Tutorial Step 2. Start by rotating triangles 2 and 3, trying to keep them nearly the same size.



3. To make the leaf symmetrical, adjust the bottom triangle to point slightly to the left, and the right triangle to point slightly to the right.
4. Press **New** to add a component to the composition. This is going to be the stem of the leaf, so we need to make it long and thin. Press **Stretch**, and drag to stretch the new triangle. Don't be alarmed if this messes up the image, just use **Scale** to adjust the size of the overlong triangle. You'll probably also have to move and rotate the new fractal to make it look convincing.

Figure 11.141. Tutorial Step 3. Add a fourth component, then stretch, scale, and move it as shown.



5. You still have to make it look more leaf-like. Increase the size of the top triangle, until you think it's thick and leafy enough. Adjust all fractals until you're happy with the shape. Right-click to get the popup menu, and choose **Select all**. Now all components are selected, and you can scale and rotate the entire leaf.
6. The final step is to adjust color. Click on the **Color Transformation** tab, and choose a different color for each fractal. To do this, check **Simple** and press the right color square. A color circle appears, where you can click or select to choose a color.
7. Press OK to apply the image, and voilà, you've just made a perfect fractal leaf! Now that you've got the hang of it, you'll just have to experiment and make your own designs. All plant-imitating fractals (be they oak trees, ferns or straws) are more or less made in this fashion, which is leaves around a stem (or several stems). You just have to twist another way, stretch and turn a little or add a few more fractals to get a totally different plant.

Figure 11.142. Tutorial Step 4. Enlarge component 1, arrange the other components appropriately, then select all, scale and rotate.

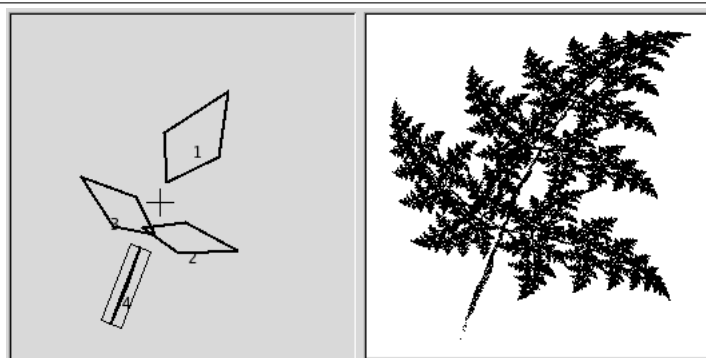
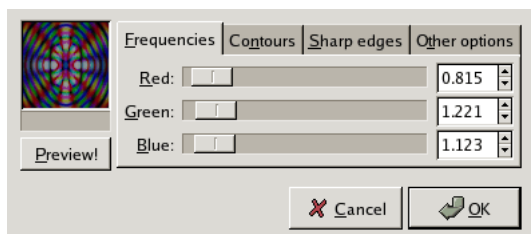


Figure 11.143. Tutorial Step 5. Assign a brownish color to component 4, and various shades of green to the other components.



11.13.6. Diffraction Patterns



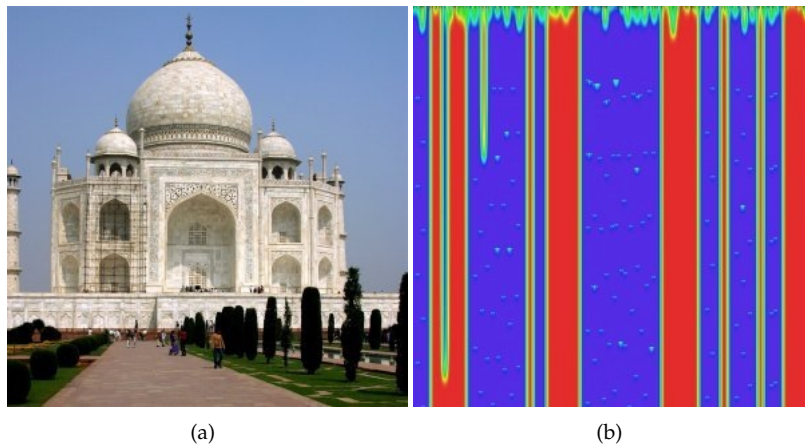
11.13.6.1. Overview

This filter is found in **Filters** → **Render** → **Patterns** → **Diffraction Patterns**.

This filter lets you make diffraction or wave interference textures. You can change the Frequency, Contours and Sharp Edges for each of the RGB channels. You can also set Brightness, Scattering and Polarization of the texture. There is no automatic preview, so you must press the preview button to update. On a slow system, this may take a bit of time.

This is a very useful filter if you want to create intricate patterns. It's perfect for making psychedelic, batik-like textures, or for imitating patterns in stained glass (as in a church window).

It seems clear that the plugin works by simulating the physics of light striking a grating. Unfortunately, the original authors never got around to writing down the theory behind it, or explaining what the parameters mean. The best approach, then, is just to twiddle things and see what happens. Fortunately, almost anything you do seems to produce interesting results.

Figure 11.144. The same image, before and after applying CML Explorer

11.13.7. CML Explorer

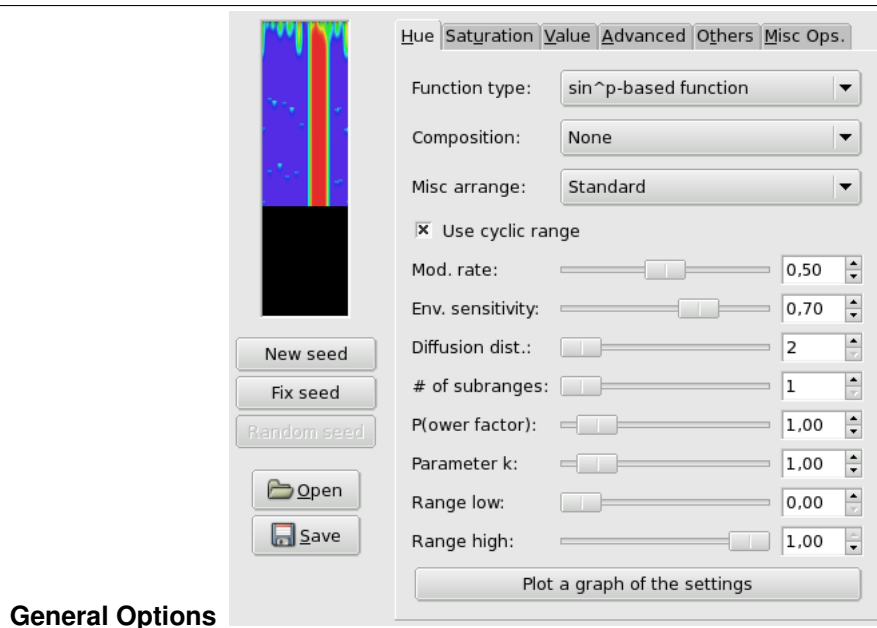
11.13.7.1. Overview

This filter is the king of texture creating filters. It is extremely efficient but very complex. It uses a mathematical method named Cellular Automata.

11.13.7.2. Starting filter

You can find this filter from the image menu through **Filters** → **Render** → **Pattern** → **CML Explorer**

11.13.7.3. Options

Figure 11.145. “CML Explorer” filter options(Hue)

Filter options are distributed among **Hue**, **Saturation**, **Value**, **Advanced**, **others** and **Misc.ops** tabs. Some more options are available. They will be described in following section.

Preview This filter offers you a Preview where you can see the result of your settings before they are applied to the image.

New seed; Fix seed; Random seed

Open; Save With these both command buttons you can save pattern settings in a file, and to get them back later.

Hue tab This filter works in the **HSV** color model. In this tab, you can set options for Hue.

Function type In this drop-down list, you can select the method that will be used to treat the current layer. These methods are:

- **Keep image's values:** With this option, image hue values will be kept.
- **Keep the first value:** With this option, starting color will be standard cyan.
- **Fill with k parameter, $k\{x(1-x)\}^p$, $k\{x(1-x)\}^p$ stepped, kx^p , kx^p stepped, $k(1-x)^p$, $k(1-x)^p$ stepped:** pattern look will depend on k that you will set later in options.
- **Delta function, Delta function stepped:** FIXME
- **\sin^p based Function, \sin^p stepped:** These options create wave-like patterns, like aurora borealis or curtain folds.

Composition Here, these options concern Hue. You can select:

None, Max(x, -), Max(x+d, -), Max(x-d, -), Min(x, -), Min(x+d, -), Min(x-d, -), Max(x+d, -), (x < 0,5), Max(x+d, -), (0,5 < x), Max(x-d, -), (x < 0,5), Max(x-d, -), (0,5 < x), Min(x+d, -), (x < 0,5), Min(x+d, -), (0,5 < x), Min(x-d, -), (x < 0,5) and Min(x-d, -), (0,5 < x).

A book could be filled with results of all these functions. Please, experiment!

Misc. Arrange This drop-down list offers you some other parameters:

Standard, Use average value, Use reverse value, With random power (0,10), With random power (0,1), with gradient power (0,1), Multiply rand. value (0,1), Multiply rand. value (0,2), Multiply gradient (0,1) and With p and random (0,1).

Also a book would be necessary to explain all possibilities of these parameters.

Use cyclic range //TODO

Mod. rate With this slider and the input box, you can set modification rate from 0.0 to 1.0. Low value results in a lined pattern.

Env. sensitivity Value is from 0.0 to 1.0

Diffusion dist. Diffusion distance: from 2 to 10.

of subranges Number of sub-rangers: from 1 to 10.

(P)ower factor With this option you can influence the **Function types** using the p parameter. Value from 0.0 to 10.0.

k Parameter With this option you can influence the **Function types** using the k parameter. Value from 0.0 to 10.0.

Range low Set lower limit of hue that will be used for calculation. values vary from 0.0 to 1.0.

Range high Set the upper limit of hue that will be used for calculation. Variations are from 0.0 to 1.0.

Plot a graph of the settings By clicking on this large button, you can open a window that displays the graph of hue present settings.

Figure 11.146. Function graph of present settings

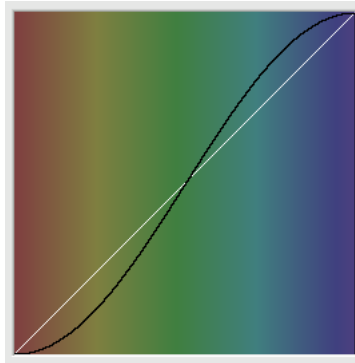


Figure 11.147. “CML Explorer” filter options(Saturation)

Saturation tab

Hue Saturation **Value** Advanced Others Misc Ops.

Function type: Fill with parameter k
 Composition: None
 Misc arrange: Standard

☐ Use cyclic range

Mod. rate: 0,60
 Env. sensitivity: 0,10
 Diffusion dist.: 2
 # of subranges: 1
 P(ower factor): 1,40
 Parameter k: 0,90
 Range low: 0,00
 Range high: 0,90

Plot a graph of the settings

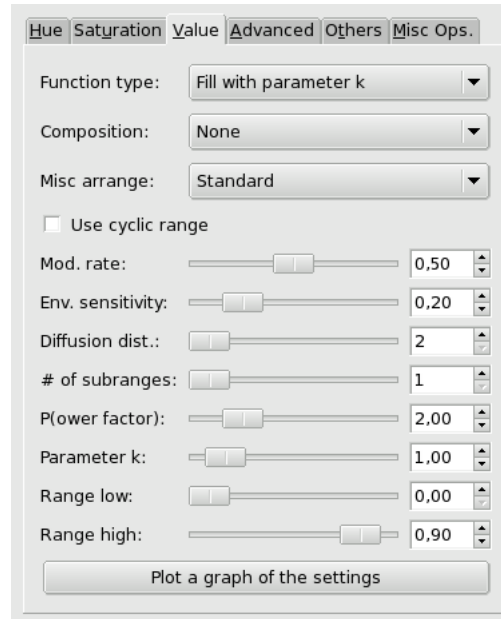
In this tab, you can set how Saturation component of the HSV color model will be used in pattern calculation.

These options are similar to Hue tab options.

In this tab, you can set how the Value (Luminosity) component of the HSV color model will be used in pattern calculation.

These options are similar to Hue tab options.

These tab settings apply to the three HSV channels.

Figure 11.148. “CML Explorer” filter options (Value)**Value tab**

Channel Sensitivity // TODO

Mutation rate // TODO

Mutation distance // TODO

In this tab, you can find various parameters about image display and random intervention.

Initial value // TODO

Zoom factor // TODO

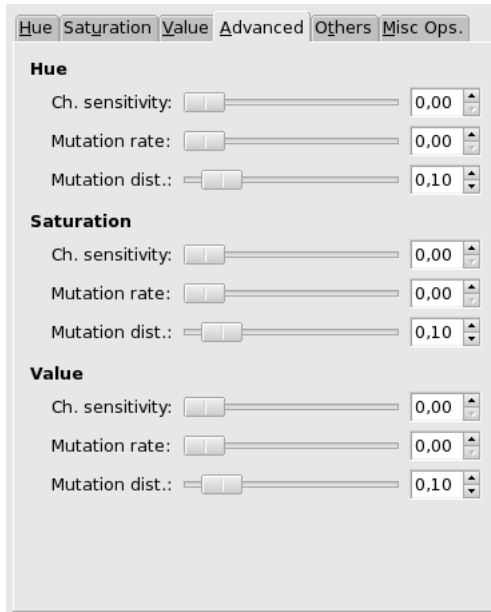
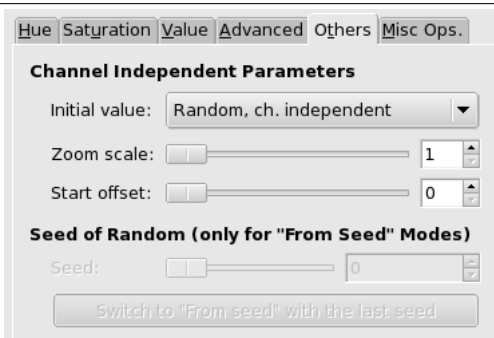
Start offset // TODO

Seed of random // TODO

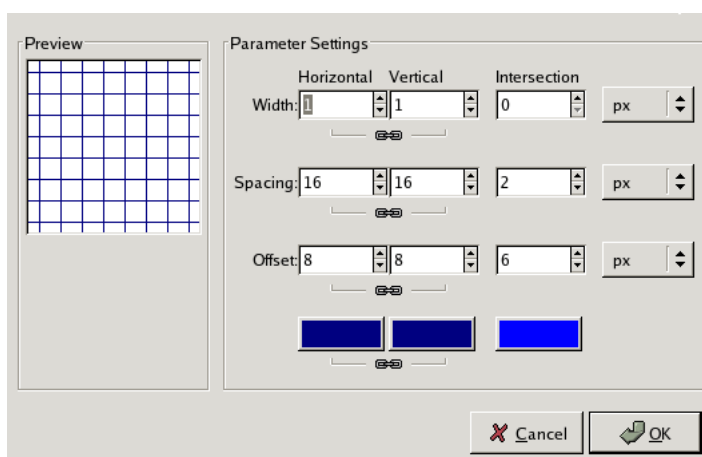
In this tab you can find various options about copy and loading.

Copy settings These options allow you to transfer information from one of the HSV channel to another one.

Selective load setting With the **Open** button of this filter, you can load previously loaded settings. If you don't want to load all of them, you can select a source and a destination channel here.

Figure 11.149. “CML Explorer” filter options (Advanced)**Advanced tab****Figure 11.150.** “CML Explorer” filter options (Others)**Others tab**

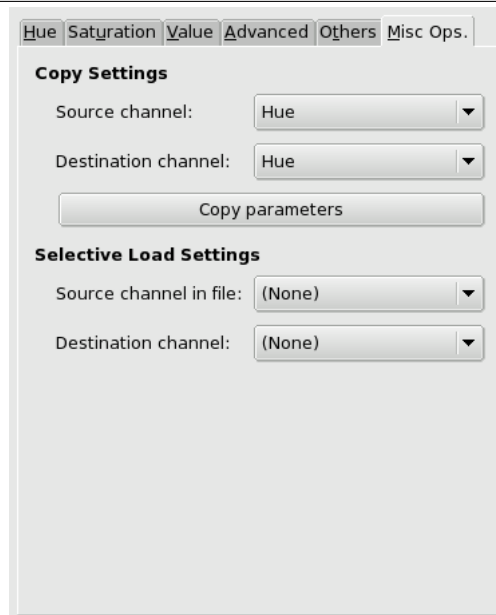
11.13.8. Grid



11.13.8.1. Overview

This filter is found in **Filters** → **Render** → **Pattern** → **Grid**.

It renders a Cartesian grid in the active layer, on top of the existing contents. The width, spacing, offsets, and colors of the grid lines can all be set by the user. By default, the lines are with the Gimp's foreground color. (Note: this plugin was used to create demonstration images for many of the other

Figure 11.151. “CML Explorer” filter options (Misc.ops)**Miscellaneous options tab**

plugins.)

TIP

If you set the grid line widths to 0, then only the intersections will be drawn, as plus-marks.

11.13.8.2. Options

There are separate options for controlling the horizontal grid lines, vertical grid lines, and intersections. By default, the horizontal and vertical settings are locked together, so that all changes are applied symmetrically. If you want to change just one of them, click on the “chain” symbol below it to unlock them. The results of changing the “intersection” parameters are rather complex.

Besides, for some options, you can select the unit of measurement thanks to a drop-down list.

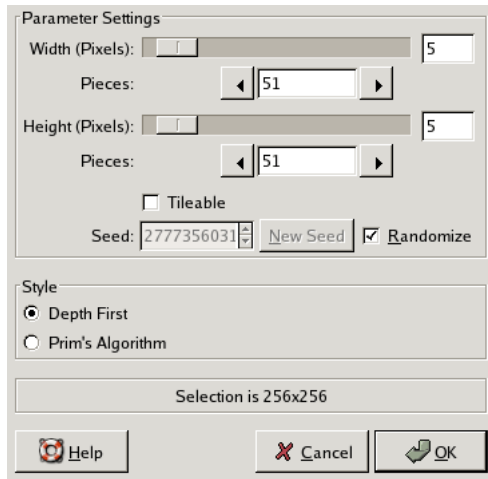
Width Sets the widths of the horizontal or vertical grid lines, or of the symbols drawn at their intersections.

Spacing Sets the distance between grid lines. **Intersection** parameter sets the distance from the actual intersection point for the starting points of the line segments that represent the intersection, at center of intersections.

Offset Sets the offset for grid lines with respect to the upper left corner. For intersections, sets the distance from the intersection point to the ending points of the line segments that are drawn.

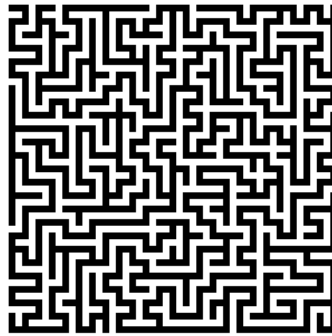
Color Selectors These allow you to set the colors of the grid lines and intersection marks.

11.13.9. Maze



11.13.9.1. Overview

Figure 11.152. An example of a rendered maze.



You can find this filter in image menu following **Filters** → **Render** → **Pattern** → **Maze**

This filter generates a random black and white maze pattern. The result completely overwrites the previous contents of the active layer. A typical example is shown below. Can you find the route from the center to the edge?

11.13.9.2. Options

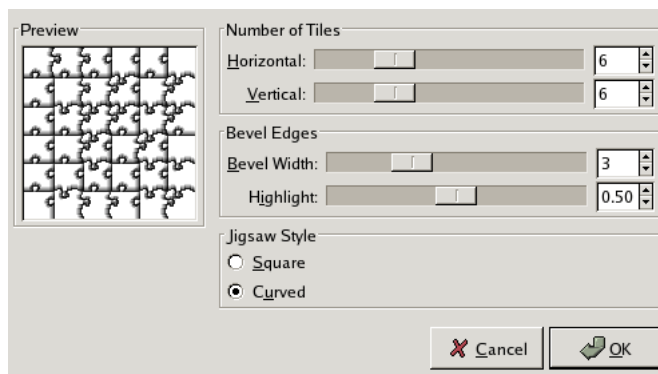
Width/Height The **Width** and **Height** sliders control how many pathways the maze should have. The lower the values for width and height, the more paths you will get. The same happens if you increase the number of pieces in the Width and Height **Pieces** fields. The result won't really look like a maze unless the width and height are equal.

Tileable If you want to use it in a pattern, you can make the maze tileable by checking this check-button.

Seed You can specify a seed for the random number generator, or ask the program to generate one for you. Unless you need to later reproduce exactly the same maze, you might as well have the program do it.

Algorithm You can choose between two algorithms for maze, "Depth First" and "Prim's Algorithm". Only a computer scientist can tell the difference between them.

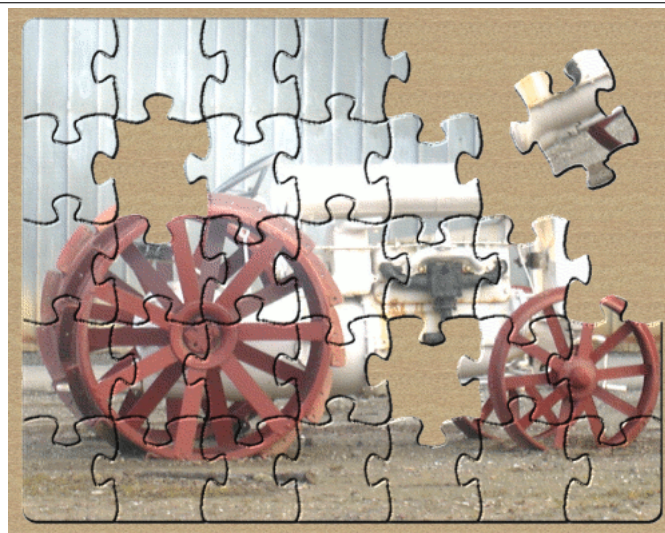
11.13.10. Jigsaw



11.13.10.1. Overview

You can find this filter in **Filters** → **Render** → **Pattern** → **Jigsaw**

Figure 11.153. Jigsaw filter example



This filter will turn your image into a jigsaw puzzle. The edges are not anti-aliased, so a little bit of smoothing often makes them look better (i. e., Gaussian blur with radius 1.0).

TIP



If you want to be able to easily select individual puzzle-piece areas, as for the example above, render the jigsaw pattern on a separate layer filled with solid white, and set the layer mode to Multiply. You can then select puzzle pieces using the **magic wand** (fuzzy select) tool on the new jigsaw layer.

11.13.10.2. Options

Number of Tiles How many tiles across the image is, horizontally and vertically.

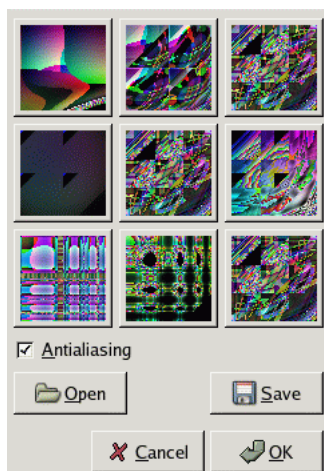
Bevel Width The Bevel width slider controls the slope of the edges of the puzzle pieces (a hard wooden puzzle would require a low Bevel width value, and a soft cardboard puzzle would require a higher

value).

Highlight The Highlight slider controls the strength of the highlight that will appear on the edges of each piece. You may compare it to the “glossiness” of the material the puzzle is made of. Highlight width is relative to the Bevel width. As a rule of thumb, the more pieces you add to the puzzle, the lower Bevel and Highlight values you should use, and vice versa. The default values are suitable for a 500x500 pixel image.

Jigsaw Style You can choose between two types of puzzle, **Square** then you get pieces made with straight lines, or **Curved** then you get pieces made with curves.

11.13.11. Qbist

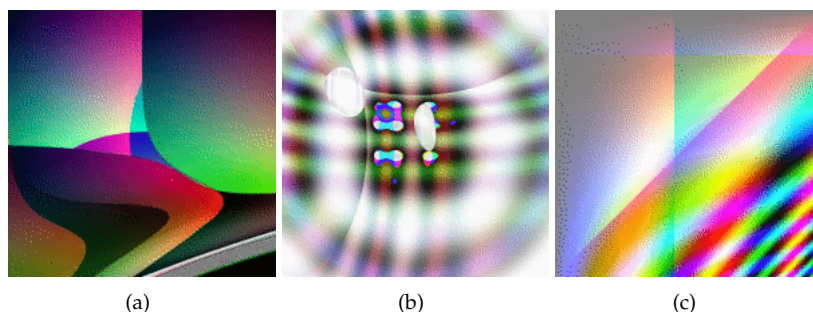


11.13.11.1. Overview

You can find this filter from the image menu through **Filters** → **Render** → **Pattern** → **Qbist**

The Qbist filter generates random textures. A starting texture is displayed in the middle square, and different variations surround it. If you like one of the alternative textures, click on it. The chosen texture now turns up in the middle, and variations on that specific theme are displayed around it. When you have found the texture you want, click on it and then click OK. The texture will now appear on the currently active layer, completely replacing its previous contents.

Figure 11.154. Three more or less random examples of qbist renderings.



11.13.11.2. Options

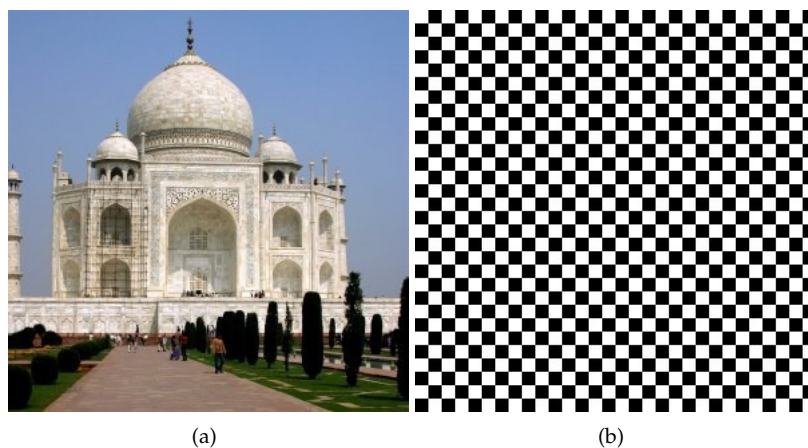
Antialiasing If you check this, it will make edges appear smooth rather than stair-step-like.

Open/Save These buttons allow you to save and reload your textures. This is quite handy because it's almost impossible to re-create a good pattern by just clicking around.

11.13.12. Checkerboard

11.13.12.1. Overview

Figure 11.155. The same image, before and after applying Checkerboard filter



This filter creates a checkerboard pattern replacing the current layer content. Colors used for pattern are current Fore- and Back ground colors of toolbox.

11.13.12.2. Starting filter

You can find this filter in image menu following **Filters** → **Render** → **Pattern** → **Checkerboard**

11.13.12.3. Options

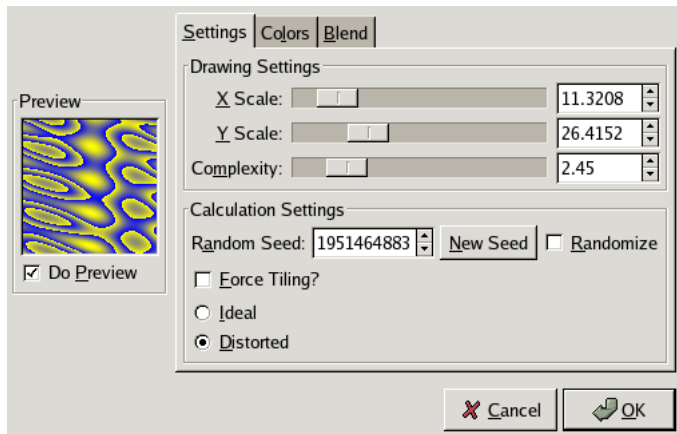
Figure 11.156. “Checkerboard” filter options



Psychobilly This option gives an eiderdown look to the Checkerboard.

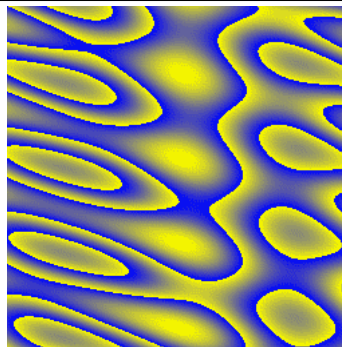
Size With this option, you can set checkerboard square size, in pixels, or in your chosen unit by using the drop-down list.

11.13.13. Sinus



11.13.13.1. Overview

Figure 11.157. Example of sinus rendering.



You can find this filter from the image menu through **Filters** → **Render** → **Pattern** → **Sinus**

The Sinus filter lets you make sinusoidally based textures, which look rather like watered silk or maybe plywood. This plug-in works by using two different colors that you can define in the Colors tab. These two colors then create wave patterns based on a sine function.

You can set the X and Y scales, which determine how stretched or packed the texture will be. You can also set the Complexity of the function: a high value creates more interference or repetition in the pattern. An example is shown below.

11.13.13.2. Options

Settings tab

X and Y Scales A low X/Y value will maximize the horizontal/vertical stretch of the texture, whereas a high value will compress it.

Complexity This controls how the two colors interact with each other (the amount of interplay or repetition).

Random Seed **Random Seed** controls random behaviour of the filter. If the same random seed in the same situation is used, the filter produces exactly the same results. A different random seed produces different results. Random seed can be entered manually or generated randomly by pressing **New Seed** button.

When the **Randomize** option is checked, random seed cannot be entered manually, but is randomly generated each time the filter is run. If it is not checked, the filter remembers the last random seed used.

Force Tiling? If you check this, you'll get a pattern that can be used as for tiling. For example, you can use it as a background in an HTML page, and the tile edges will be joined seamlessly.

Ideal/Distorted This option gives additional control of the interaction between the two colors. Distorted creates a more distorted interference between the two colors than Ideal.

Color settings

Colors Here, you set the two colors that make up your texture. You can use Black and white or the foreground/background colors in the toolbox, or you can choose a color with the color icons. The *Alpha Channels* sliders allow you to assign an opacity to each of the colors. (If the layer you are working on does not have an alpha channel, they will be grayed out.)

Blend settings

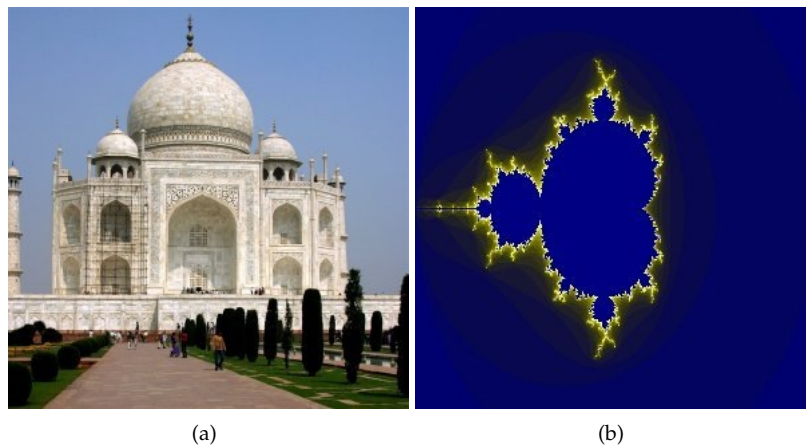
Gradient You can choose between three functions to set the shapes of the waves that are produced: Linear, Bilinear and Sinusoidal.

Exponent The Exponent controls which of the two colors is dominant, and how dominant it is. If you set the exponent to -7.5, the left color will dominate totally, and if you set it to +7.5 it will be the other way around. A zero value is neutral.

11.13.14. Fractal Explorer

11.13.14.1. Overview

Figure 11.158. The same image, before and after applying Fractal Explorer filter



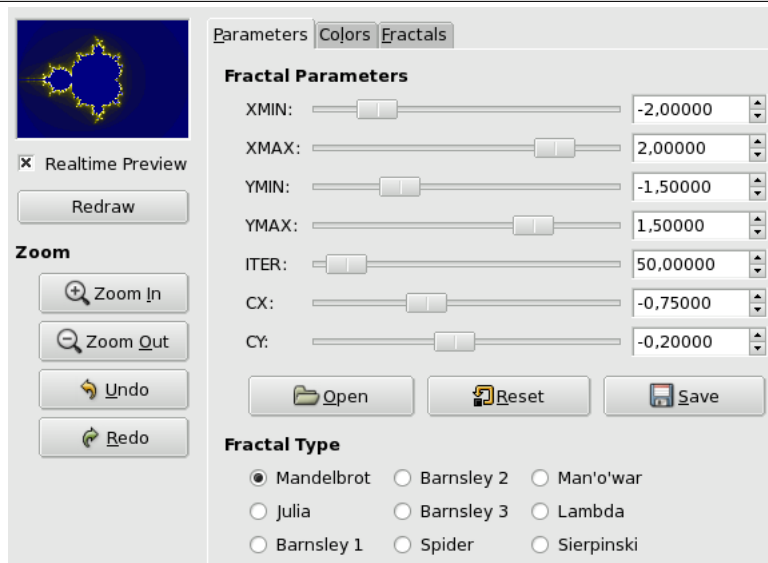
11.13.14.2. Starting filter

This filter is found in **Filters** → **Render** → **Nature** → **Fractal Explorer**

11.13.14.3. Options

Preview domain Uncheck the **Real time preview** only if your computer is slow. In this case, you can update preview by clicking on the **Redraw** button.

By clicking-dragging mouse pointer on preview, you can draw a rectangle delimiting an area which will be zoomed.

Figure 11.159. "Parameters" options for Fractal Explorer filter

Zoom You have there some options to zoom in or zoom out. The **Undo** allows you to return to previous state, before zooming. The **Redo** allows you to reestablish the zoom you had undone, without having to re-create it with the zoom-in button.

Parameters tab This tab contains some options to set fractal calculation and select fractal type.

Fractal Parameters here, you have sliders and input boxes to set fractal spreading, repetition and aspect.

XMIN; XMAX; YMIN; YMAX You can set fractal spreading between a MINimum and a MAXimum, in the horizontal (X) and/or vertical (Y) directions. Values are from -3.0 to 3.0.

ITER With this parameter, you can set fractal iteration, repetition and so detail. Values are from 0.0 to 1000.0

CX; CY With these parameters, you can change fractal aspect, in the horizontal (X) and/or vertical (Y) directions, except for Mandelbrot and Sierpinski types.

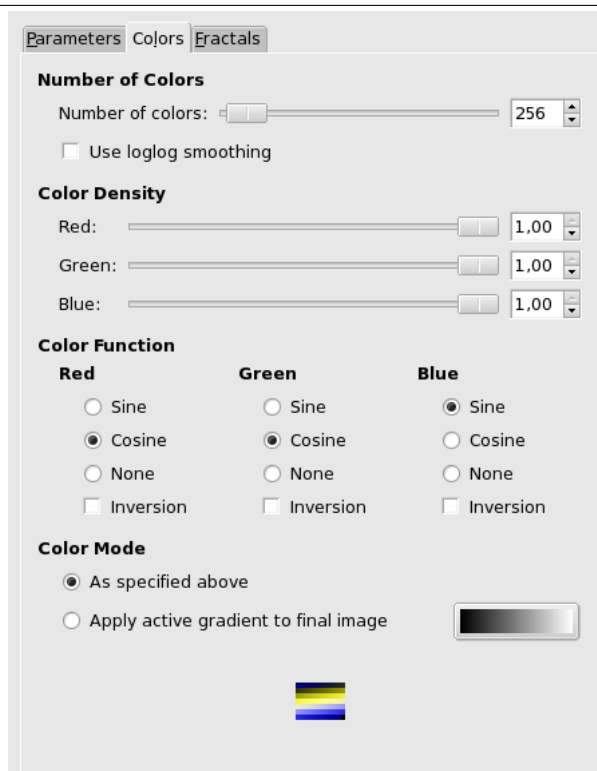
Open; Reset; Save With these three buttons, you can save your work with all its parameters, open a previously saved fractal, or return to the initial state before all modifications.

Fractal type You can choose what fractal type will be, for instance **Mandelbrot, Julia, Barnsley** ou **Sierpinski**

This tab contains options for fractal color setting.

Color number This slider and its input boxes allow you to set the number of colors for the fractal, between 2 and 8192. A palette of these colors is displayed at the bottom of the tab. Actually, that's a gradient between colors in fractal: you can change colors with "Color intensity" and "Color function" options. Fractal colors don't depend on colors of the original image (you can use a white image for fractals as well).

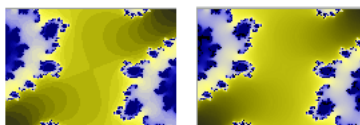
Figure 11.160. Color tab options



Colors tab

Figure 11.161. Loglog smoothing example

Use loglog-smoothing



Color density These three sliders and their inputboxes allow you to set color intensity in the three **Red**, **Green** and **Blue** color channels. Values vary from 0.0 to 1.0.

Color function For the **Red**, **Green** and **Blue** color channels, you can select how color will be treated:

- **Sinus**: Color variations will be modulated according to the sinus function.
- **Cosinus**: Color densities will vary according to cosinus function.
- **None**: Color densities will vary linearly.
- **Inversion**: if you check this option, higher color values will be swapped with lower ones and vice-versa.

Color Mode These options allow you to set where color values must be taken.

- **Apply active gradient to final image**: used colors will be that of active gradient. You should be able to select another gradient by clicking on the gradient source button.

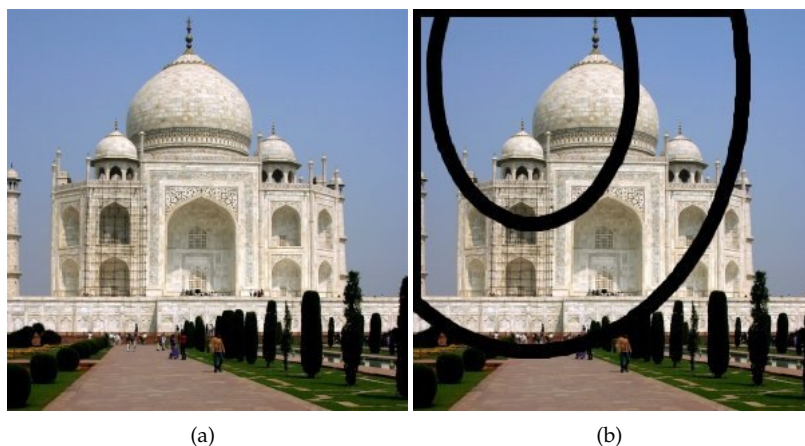
This tab contains a big list of fractals with their parameters, that you can use as a model: only click on the wanted one.

Figure 11.162. “Fractal tab” options

The **Refresh** allows you to update the list if you have saved your work, without needing to re-start Gimp. You can delete the selected fractal from the list by clicking on the **Delete**.

11.13.15. Gfig

11.13.15.1. Overview

Figure 11.163. The same image, before and after using Gfig

This filter is a tool: You can create geometrical figures to add them to the image. It is very complex. I hope this paper will help you.

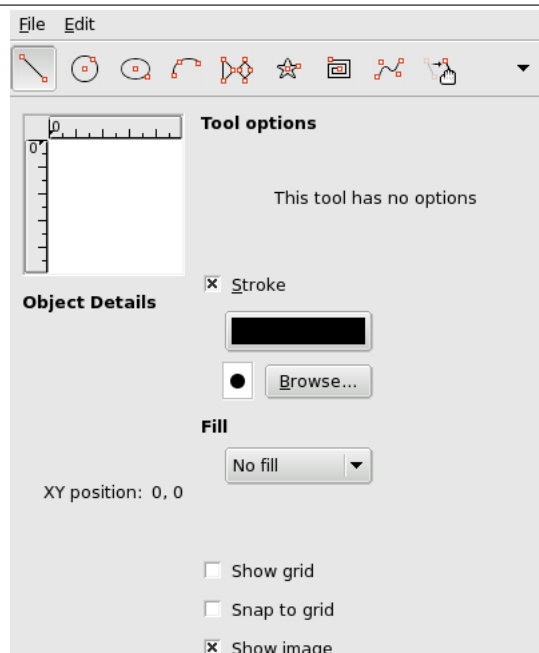
When using this filter, elements inserted in the image will be placed in a new layer. So the image will not be modified, all modifications occurring in this layer.

11.13.15.2. Starting filter

You get to this filter via the Image menu through **Filters** → **Render** → **Gfig**

11.13.15.3. Options

Figure 11.164. “Gfig” filter options



The tool bar At the top of dialog, you can find a set of icons which represents the functions of this filter. Help pop-ups are explicit.

Functions for object drawing On the left part of tool bar, you can find some functions for object drawing. You enable them by clicking on the corresponding icon. You can create the following objects (note that *Control points* are created at the same time as object):

- **Line:** With this tool, you can draw lines. Click on Preview to mark start point, then drag mouse pointer to the end point.
- **Circle:** With this tool, you can draw circles. Click on Preview to mark center, then drag mouse pointer to the wanted radius.
- **Ellipse:** With this tool, you can draw ellipses. Click on Preview to mark center, then drag mouse pointer to get the wanted size and form.
- **Arc>:** With this tool, you can draw circle arcs. Click on Preview to set start point. Click again to set another arc point. Without releasing mouse button, drag pointer; when you release mouse button, the arc end point is placed and an arc encompassing these three points is drawn.
- **Regular polygon:** With this tool, you can create a regular polygon. Start with setting side number in **Tool Options** at the right of Preview. Then click on Preview to place center and, without releasing mouse button, drag pointer to get the wanted size and orientation.
- **Star:** With this tool, you can create a star. Start with setting side number (spikes) in **Tool Options** at the right of Preview. Then click on Preview to place center and, without releasing mouse button, drag pointer to get the wanted size and orientation.
- **Spiral:** With this tool, you can create a spiral. Start with setting spire number (sides) and spire orientation in **Tool Options** at the right of Preview. Then click on Preview to place center and, without releasing mouse button, drag pointer to get the wanted size.

- **Bezier's Curve:** With this tool, you can create Bezier's curves. Click on Preview to set start point and the other points: the curve will be created between these points. To end point creation press **Shift** key when creating last point.

Functions for object management In the middle of tool bar, you can find tools to manage objects:

- **Move (Object):** With this tool, you can move the active object. To enable an object, click on a control point created at the same time as the object.
- **Move (Point):** With this tool, you can click-and-drag one of the control points created at the same time as object. Each of these points moves the object in a different way.
- **Copy:** With this tool, you can duplicate an object. Click on an object control point and drag it to the wanted place.
- **Delete:** Click on an object control point to delete it.
- **Select:** With this tool, you can select an object to active it. Simply click on one of its control points.

Functions for object organisation At the right of tool bar, you can find tools for object superimposing (you can also get them by clicking on the drop-down list button if they are not visible). You have:

- **Raise/Lower Selected Object:** With this tool, you can push the selected object one level up or down.
- **Raise/Lower selected object to top/bottom:** self explanatory.

Functions for object display The drop-down list in tool bar offers you some more functions:

- **Back/Forward:** These functions allow you to jump from one object to another. Only this object is displayed.
- **Show all objects:** This function shows all objects again, after using both previous functions.

Preview field Preview comes with several options:

Settings In this area, you have several options to work with this filter.

Werkzeugoptionen This area shows tool options.

Stroke If this option is checked, the object will be drawn. Two buttons are available, to select color and brush type.

Filling With help of this drop-down list, you can decide whether and how the object will be filled, with a color, a pattern or a gradient.

Show grid If this option is checked, a grid is applied on Preview to make object positioning easier.

Snap to Grid If this option is checked, objects will align to the grid.

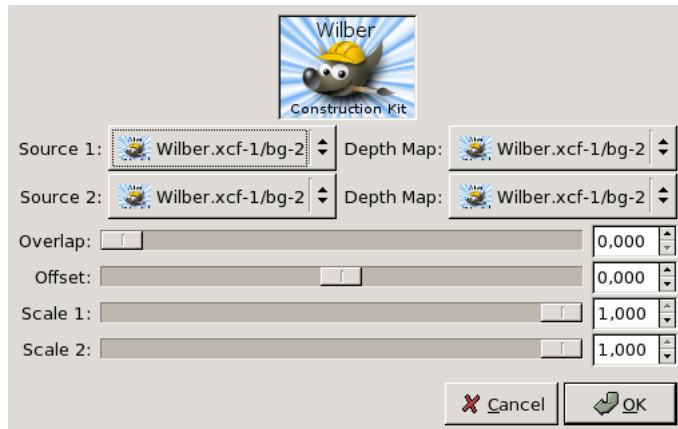
Show image When this option is checked, the current image is displayed in Preview. If not checked, a white surface is shown and neither stroke color nor brush type are shown.

11.14. Combine filters

11.14.1. Combine filters introduction

The combine filters associate two or more images into a single image.

11.14.2. Depth Merge



Depth Merge is a Combine Filter that is useful to combine two different pictures.

11.14.2.1. Overview

It combines the two pictures selected as "sources" by blending them. Darkest values are predominant in the resulting image. This could be done using blending modes but in this case there aren't any options.

NOTE



To work with this filter, at least two images are needed that have to be same sized.

11.14.2.2. Accessing this Filter

This filter is in **Filters/Combine/Depth Merge**

11.14.2.3. Options

Source 1, Source 2 Defines the source images to use for the blending.

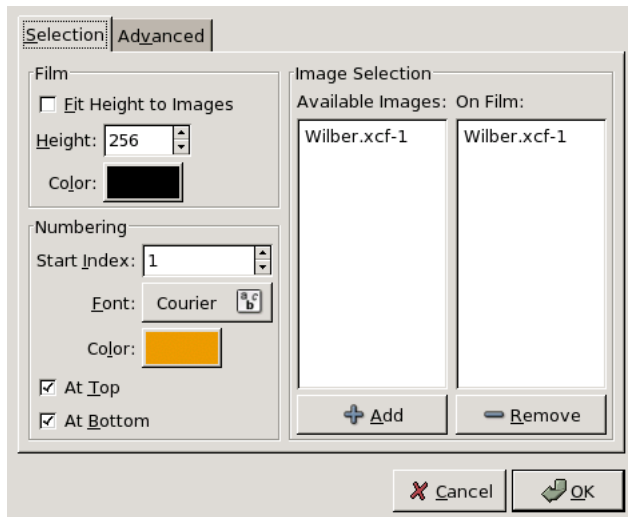
Depth Map Define the picture to use as transformation maps for the sources.

Overmap Creates soft transitions between images.

Offset Defines the darkness value that will be applied to sources maps.

Scale 1, Scale 2 Same as above but more sensitive and applied to each map separatly.

11.14.3. Film



11.14.3.1. Overview

Film filter allows the user to merge several pictures into a photographic film drawing.

NOTE



This filter does not invert colors, so it does not imitate negative film of the sort used to produce prints. Instead you should think of the result as an imitation of slide film or cinema film.

11.14.3.2. Accessing this Filter

This filter is in **Image/Filters/Combine/Film**

11.14.3.3. Options

Selection Options

Fit Height to images Applies the height of original pictures to the resulting one.

Height Allows to define the height of resulting picture. If originals have different sizes, they will be scaled to this size.

Color By clicking on the color dwell you can define the color of the film (around and between pictures).

Start Index Defines the beginning number that will be used for the images.

Font Defines the font of digits.

Color By clicking on the the color dwell, you can define the font color of digits.

At Top, At Bottom Defines the position of the number.

Available Images Shows the pictures that can be used for the merging. The pictures are these that are already opened in Gimp.

On Film Shows the pictures chosen to be merged.

Add This button allows the user to put an available image in the "On film" section.

Remove This button allows to bring a picture from "on Film" to "available images". After that, the picture will not be used anymore in the resulting document.

Advanced Options

Image Height Defines the height of each pictures in the resulting image.

Image Spacing Defines the space between the pictures as they will be inserted in the future image.

Hole Offset Defines the hole position from image border.

Hole Width Defines the width of the holes in the resulting image.

Hole Height Defines the height of the holes in the resulting image.

Hole Spacing Defines the space between holes

Number Height Defines the height of the index number, proportionnaly to the height of the picture.

12. GIMP keys and mouse reference

Help

Name

Help — Key reference for **Help** menu

Help

F1 Help

Shift+ F1 Context Help

Toolbox

Name

Toolbox — Key reference for **Toolbox** menu

Toolbox

TOOLS

R Rect Select

E Ellipse Select

F Free Select

Z Fuzzy Select

Shift+ O Select By Color

I Scissors

B Paths

O Color Picker

M Move

Shift+ C Crop and Resize

Shift+ R Rotate

Shift+ T Scale

Shift+ S Shear

Shift+ P Perspective

Shift+ F Flip

T Text

Shift+ B Bucket Fill

L Blend

N Pencil

P Paintbrush

Shift+ E Eraser

A Airbrush

K Ink

C Clone

V Convolve

S Smudge

Shift+ D Dodge/Burn

NOTE



Double click on the tool buttons opens the Tool Options dialog.

CONTEXT

X Swap Colors

D Default Colors

NOTE



Click on the colors to change the colors.

File

Name

File — Key reference for **File** menu

File

Ctrl+ N New image

Ctrl+ O Open image

Ctrl+ Alt+ O Open image as new layer

Ctrl+ D Duplicate image

Ctrl+ 1 Open recent image 01

Ctrl+ 2 Open recent image 02

Ctrl+ 3 Open recent image 03

Ctrl+ 4 Open recent image 04

Ctrl+ 5 Open recent image 05

Ctrl+ 6 Open recent image 06

Ctrl+ 7 Open recent image 07

Ctrl+ 8 Open recent image 08

Ctrl+ 9 Open recent image 09

Ctrl+ 0 Open recent image 10

Ctrl+ S Save image

Shift+ Ctrl+ S Save under a new name

Ctrl+ Q Quit

Dialogs

Name

Dialogs — Key reference for **Dialogs** menu

Dialogs

Ctrl+ L Layers

Shift+ Ctrl+ B Brushes

Shift+ Ctrl+ P Patterns

Ctrl+ G Gradients

Shift+ Ctrl+ T Tool-Options

Ctrl+ P Palettes

Shift+ Ctrl+ I Info window

Shift+ Ctrl+ N Navigation window

NOTE



These open a new dialog window if it wasn't open yet, otherwise the corresponding dialog gets focus.

WITHIN A DIALOG

Alt+ F4, Ctrl+ W Close the window

Tab Jump to next widget

Shift+ Tab Jump to previous widget

Enter Set the new value

Space, Enter Activate current button or list

Ctrl+ Alt+ PgUp, Ctrl+ PgDn In a multi-tab dialog, switch tabs

NOTE



This accepts the new value you typed in a text field and returns focus to canvas.

WITHIN A FILE DIALOG

Shift+ L Open Location

Alt+ Up arrow Up-Folder

Alt+ Down arrow Down-Folder

Alt+ Home Home-Folder

Esc Close Dialog

View

Name

View — Key reference for **View** menu

View

WINDOW

F10 Main Menu

Shift+ F10, right click Drop-down Menu

F11 Toggle fullscreen

Shift+ Q Toggle quickmask

Ctrl+ W Close document window

NOTE



Menus can also be activated by Alt with the letter underscored in the menu name.

ZOOM

+ Zoom in

- Zoom out

1 Zoom 1:1

Ctrl+ E Shrink wrap

Shift+ Ctrl+ E Fit image in window

Shift+ mouse wheel Zoom

NOTE



This fits the windows to the image size.

SCROLLING (PANNING)

Ctrl+ arrows Scroll canvas

middle button drag Scroll canvas

mouse wheel Scroll canvas vertically

Ctrl+ mouse wheel Scroll canvas horizontally

NOTE



Scrolling by keys is accelerated, i.e. it speeds up when you press Shift+arrows, or jumps to the borders with Ctrl+arrows.

RULERS AND GUIDES

mouse drag Drag off a ruler to create guide

Ctrl+ mouse drag Drag a sample point out of the rulers

Shift+ Ctrl+ R Toggle rulers

Shift+ Ctrl+ T Toggle guides

NOTE



Drag off the horizontal or vertical ruler to create a new guideline. Drag a guideline onto the ruler to delete it.

Edit

Name

Edit — Key reference for **Edit** menu

Edit

UNDO/REDO

Ctrl+ Z Undo

Ctrl+ Y Redo

CLIPBOARD

Ctrl+ C Copy selection

Ctrl+ X Cut selection

Ctrl+ V Paste clipboard

Ctrl+ K Clears selection

Shift+ Ctrl+ C Named copy selection

Shift+ Ctrl+ X Named cut selection

Shift+ Ctrl+ V Named paste clipboard

NOTE



This places a copy of the selection to the GIMP clipboard.

FILL

Ctrl+ D Fill with FG Color

Ctrl+ D Fill with BG Color

Ctrl+ D Fill with Pattern

Layers

Name

Layers — Key reference for **Layers** menu

Layers

PgUp, Ctrl+ Tab Select the layer above

PgDn, Shift+ Ctrl+ Tab Select the layer below

Home Select the first layer

End Select the last layer

Ctrl+ M Merge visible layers

Ctrl+ H Anchar layer

Selections

Name

Selections — Key reference for **Selections** menu

Selections

Ctrl+ T Toggle selections

Ctrl+ A Select all

Shift+ Ctrl+ A Select none

Ctrl+ I Invert selection

Shift+ Ctrl+ L Float selection

Shift+ V Path to selection

Plug-ins

Name

Plug-ins — Key reference for **Plug-ins** menu

Plug-ins

Ctrl+ F Repeat last plug-in

Shift+ Ctrl+ F Reshow last plug-in

Zoom tool

Name

Zoom tool — Key reference for **Zoom tool** menu

Zoom tool

click Zoom in

Shift+ click Zoom out

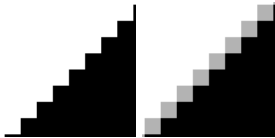
mouse drag Zoom into the area

Glossary

A

Alpha Refers to transparency. An Alpha Channel allows transparency control. Certain image formats may only contain a single Alpha Channel allowing a transparency of on or off. Other formats allow a variable level of transparency.

Antialiasing Antialiasing is the process of reversing an alias. Antialiasing produces smoother curves by adjusting the boundary between the background and the pixel region that is being antialiased. Generally, pixel intensities or opacities are changed so a smoother merge with the background is achieved. With selections, the selection edge is affected so that the selection edge opacity is lowered.



B

BMP An uncompressed bitmap format used by Microsoft Windows for displaying graphics. Color depth is typically 1, 4 or 8 bits, although the format does support more.

Bitmap "From The Free On-line Dictionary of Computing (13 Mar 01) : bitmap A data file or structure which corresponds bit for bit with an image displayed on a screen, probably in the same format as it would be stored in the display's video memory or maybe as a device independent bitmap. A bitmap is characterised by the width and height of the image in pixels and the number of bits per pixel which determines the number of shades of grey or colours it can represent. A bitmap representing a coloured image (a "pixmap") will usually have pixels with between one and eight bits for each of the red, green, and blue components, though other colour encodings are also used. The green component sometimes has more bits than the other two to cater for the human eye's greater discrimination in this component. "

C

Channels Each image is divided up into separate channels and then recombined before being sent to the output device. An output device is most usually a screen. The channels that are used when rendering images to a screen are Red, Green, and Blue. Other output devices may use different channels.

Channels can be useful when working on images that need adjustment to one particular color. If, for example, the removal of "red-eye" is the goal, work on the Red channel is most obviously a ready solution. Channels can be seen as masks that allow or restrict the output of the color that the channel represents. By running filters against this channel information, many varied and subtle effects can be put in to play by the experienced GIMP user.

Clipboard Clipboard is the term used to describe a temporary area of memory that is used to transfer data between applications or documents. The GIMP uses slightly different clipboard approaches when used under different operating systems. Under Linux/XFree, the XFree clipboard is used for text and The GIMP internal image clipboard is used for images that are being transferred between image documents. When The GIMP is used with other operating systems, differences may be apparent. Any differences should be outlined in the operating system specific documentation for the individual GIMP package.

The most fundamental operations provided by a clipboard interface allow for Cut, Copy, and Paste. Cut is used to denote the removal of an item that is sent to the clipboard. Copy leaves the item in the document and copies it to the clipboard. Paste copies to the document whatever

happens to be in the clipboard. The GIMP will make an intelligent decision about what to paste depending upon the target. If the target is a canvas, then paste operation will use the image clipboard. If the target is a text entry box, then the paste operation will use the text clipboard.



Color modes RGB : Red Green Blue

This model is used to represent colors on computers and television monitors. These colors are emitted by screen elements and not reflected as they are on paints. The resulting color is a combination of the three primary RGB colors, with different degrees of lightness. If you look at your television screen closely, whose pitch is less than that of a computer screen, you can see the red, green and blue elements differently enlightened. It is said that this color model is *additive*

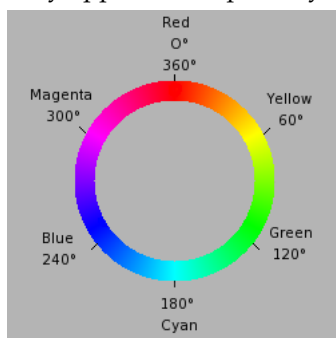
GIMP uses an eight bits (8-bit) channel for each primary color and so 256 intensities (Values) are available resulting in $256 \times 256 \times 256 = 16,777,216$ colors (called True Color).

It is not evident why these combinations produce rather unexpected colors. Why, for instance, $229R + 205G + 229B$ gives a kind of pink? This depends on our eye and our brain. There is no color in Nature, only a continuous variation of the light wavelength. In retina are three kinds of cones. The same wavelength acting on the three types of cones stimulates them differently and mind has learned after several millions of years of Evolution how to recognize a color in these differences.

You can easily understand that no light ($0R + 0G + 0B$) gives complete darkness, black, and full light ($255R + 255G + 255B$) gives white. Equal intensity in all channels gives a gray level. So you can have only 256 gray levels.

Mixing two *primary colors* in RGB mode gives a *Secondary color* that is a color of the CMY mode. So combining Red and Green gives Yellow, Green and Blue give Cyan, Blue and Red give complete darkness, black, and full light ($255R + 255G + 255B$) gives white. Equal intensity in all channels gives a gray level. So you can have only 256 gray levels.

Mixing two *primary colors* in RGB mode gives a *Secondary color* that is a color of the CMY mode. So combining Red and Green gives Yellow, Green and Blue give Cyan, Blue and Red give Magenta. Don't mistake secondary colors for *Complementary colors* which are diametrically opposed to a primary color in the chromatic circle:



Mixing a primary color with its complementary color gives gray (neutral color)

It is important to know what happens when you handle colors. The rule to remember is that decreasing a primary color results in increasing the saturation of the complementary color (and conversely). Here is the explanation: When you decrease a channel value, for instance the Green one, you increase the relative importance of other both, here Red and Blue. Now combination of these two channels gives the secondary color, Magenta, that is quite the complementary color of Green.

Exercise: You can check this. Create a new image with only a white background (255R+255G+255B). Open the Tools/Color Tools/Levels dialog and select the Red channel. If necessary, check the preview box. Move the white slider to the left to decrease the Red value. You will notice that the background of your image turns more and more to Cyan. Now, decrease the Blue channel: only the Green will persist. As a training go backwards, add color and try to guess what hue will appear.

The **Color Picker** tool allows you to know the RGB values of a pixel and the HTML **hextriplet** for the color.

HSV: Hue Saturation Value The RGB mode is well adapted to computer screens but it doesn't allow to describe what we see in every day life: a light green, a pale pink, a dazzling red... The HSV mode accounts for these features. HSV and RGB are not independent. You can see that with the color-picker: when you change one the other is also modified. Brave can read *Grokking the Gimp* which explains their relations.

- **Hue:** It's the color itself, resulting from the combination of primary colors. All color shades (except greylevels) are represented in a *chromatic circle*: Yellow, Blue, and also purple, orange... It goes from 0° to 360°. ("Color" term is often used instead of "Hue". RGB colors are "Primary colors").
- **Saturation:** This parameter describes how pale the color is, as when you add white in a can of paint: a completely saturated hue will be pure. If less saturated, it will be pastel. Saturation ranges from 0 to 100, from white to the purest color.
- **Value:** It is merely Luminosity, the luminous intensity. It's the amount of light emitted by a color. You notice this change of luminosity when a color goes from shadow to sun or when you increase the luminosity of your screen. It ranges from 0 to 100. Pixels values in the three channels are also luminosities: "Value" is the vectorial sum of these elementary values in the RGB space.



CMYK: Cyan Magenta Yellow black

Let us say first that Gimp doesn't support the CMYK mode. (An experimental plugin providing rudimentary CMYK support can be found at www.blackfiveservices.co.uk/separate.shtml <<http://www.blackfiveservices.co.uk/separate.shtml>>.)

This mode is that of printing, that of your printer whose cartridges contain these colors. It's the mode of painting and of all the objects around us, where light is not emitted but reflected. Objects absorb a part of the light wave and we see only the reflected part. Notice that our eye with its cones sees this reflected light in RGB mode. An object is red because Green and Blue have been absorbed. Now, Green and Blue combination is Cyan. So, Cyan is absorbed when you add Red. Conversely, if you add Cyan the complementary Red is absorbed: this system is *subtractive*. If you add Yellow, you decrease Blue and if you add Magenta, you decrease Green.

You could logically think that by mixing Cyan, Magenta and Yellow you subtract Red, Green and Blue, and so that the eye sees no light at all, that's to say Black. The question is more complex. In fact you will see a dark brown. That's why this mode has also the Black color and why your printer has a Black cartridge. That's finally cheaper: the printer has not to mix the three other colors to create an imperfect black. It has only to add some Black.

Graylevel When you create a new image you can choose the graylevel mode (that you can colorize later by transforming it to the RGB mode). You can also transform an existing image to graylevel (but all formats do not accept this transformation) thanks to the command [Graylevel](#).

As we have explained in RGB mode, Gimp 24-bit images can't have more than 256 gray levels, coded on 8-bit. If you switch from graylevel to RGB mode you give your image a RGB structure with three color channels but of course your image remains gray.

Graylevel image files (8-bit) are smaller than RGB files.

You can also transform a RGB image to graylevel by desaturating it thanks to the HSV option of the [Decompose](#) filter, the [Colorize](#) tool, or the [Hue-Saturation](#) filter.

Indexed colors The indexed mode has been invented by CompuServe at the beginning of the Web to create small color image files, that could be easily transmitted. GIF (Graphic Interchange Format) was the first indexed format.

The principle is to code each pixel color in a table attached to the image, all pixels with the same color have the same code.

You can see this palette when you have opened a GIF image thanks to the Dialogs / Indexed Palette. It allows you to edit and modify each color.

See also [Indexed Palette](#).

In a GIF image, transparency is coded on one bit: transparent or not.

D

Dithering Dithering refers to the math and voodoo involved in rendering an image that has few colors seem like it has many. Dithering is accomplished in different ways depending on the output device and the program. One particularly effective method is clustering pixels of color together in an attempt to simulate another color. This is achieved by the human eye and the tendency for it to mix colors while viewing complex color patterns. A common dithering effect is seen on television screens or in newspaper print. From a distance the images seem to be constructed of many varied colors or shades, but upon closer inspection this is certainly not the case. A color television uses only three colors clustered together in various states of on or off. A black and white newspaper uses only black ink, yet pictures in newspapers appear to be constructed of grey tones. Furthermore, there are techniques used to achieve greater success in dithering.

The GIMP can use the Floyd-Steinberg dithering technique, for example. This dithering method is simply put, a mathematical way of clustering the pixels to accomplish better results than other dithering methods. Of course, there are always exceptions and there are many different dithering models that are in use today.

F

File Format A way that an image is written. You should select a file format which is suitable for your situation. JPEG and PostScript are examples of file formats.

Feathering Feathering is a process by which the edges of a region are softly blended with the background.



Floating Selection Floating selections are similar in function to layers except that floating selections must be anchored before work can resume on any other layers in the image. While a selection is floating, any number of functions can be used to alter the image data contained within the float.

There are two methods available for anchoring a float. The first, and most useful, is to change the float into a new layer. This is achieved by creating a new layer while the float is active. The second method involves anchoring the float to an already existing layer. This is done by clicking anywhere on the image except on the float. Doing so will merge the float with the background layer.

Any pasted selection will be first rendered as a floating selection.

Floyd-Steinberg Dithering This method of dithering looks at the current pixel color and retrieving the closest values from the palette. These colors are then distributed to the pixel areas below and to the right of the original pixel.

G

GIF Trademarked by CompuServe, with LZW compression patented by Unisys. GIF images are in 8 bit indexed color and support binary transparency (but not semi-transparency). They can also be loaded in interlaced form by some programs. The GIF format also supports animations and comments. Use GIF for transparent Web graphics and GIF animations. For most purposes, though, **PNG** can be used in place of GIF and is a better choice.

GNU GNU's Not Unix, is a project of a free (Unix like) operative system. The project was started back in 1983 thanks to the effort of the Free Software Foundation, an organization devoted to the creation and support of free software. GIMP is an official GNU application. You can find a better definition on the wikipedia site<<http://en.wikipedia.org/wiki/GNU>>.

Guides To place a guide, left-click-and-hold on a ruler and drag the mouse pointer in to the image. A guide appears and follows the pointer. You can so place two guides, a horizontal one and a vertical one. They appear as blue dashed lines. They do not print.

Guides are a convenient way to position a selection or a layer. As soon as a guide is created, the Move tool is selected and the mouse pointer turns to a move icon.

Guide behaviour depends on the Affect mode selected in the Move tool. When the *Transform Layer* mode is selected, the mouse pointer turns to a small hand when it reaches a guide that becomes red and active. You can then move it by a click and drag. When the *Transform Selection* mode is selected you can place a guide, but you can no longer move it after quitting it.

To make positioning easier you can 'magnetize' guides with the option **Snap to Guides**

You can abort displaying guides without removing them by the option **Show Guides**

H

Hextriplet A way of representing color in the form #rrggbb where "rr" represents red, "gg" green, and "bb" blue. Commonly used in web design.

HSV Hue Saturation Value, a way of representing color. The Hue is the color like red or blue, the Saturation is how strong the color is and the Value is the brightness. This is sometimes called HSB or Hue Saturation Brightness.

I

Image Hose Image Hoses are special brushes that contain many different frames. An example of this might be a footstep brush that contains two images. One of a left footprint and one of a right footprint. During the application of this hypothetical hose brush, one would see the left footprint followed by that of the right in a continuous fashion. This method of animation for brushes is very powerful.

Incremental, paint mode This paint mode renders each brush stroke directly onto the active layer. If incremental mode is not set, there is a canvas buffer that is composited with the active layer.



The two images above were created using a brush with spacing set to sixty. The image on the left shows non-incremental painting and the image on the right shows the difference that incremental painting can produce. Incremental paint mode results in each brush application, through the duration of a stroke, being rendered in addition to any previous brush renderings.

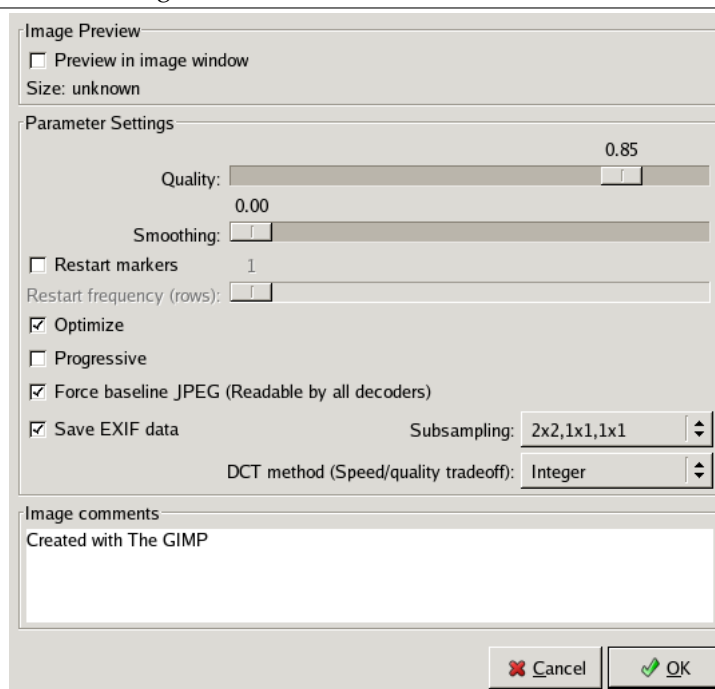
Interpolation When you enlarge an image pixels become apart if image resolution is not enough. These missing pixels are replaced by pixels that are calculated from surrounding pixels, by interpolation. Interpolation methods in The GIMP are labelled with a speed marker. Faster methods lead to lower quality transformations whereas slower methods lead to higher quality transformations.

J

JPEG This format supports compression and works at all color depths. The image compression is adjustable, but beware: Too high a compression could severely reduce image quality, since JPEG compression is lossy. Use JPEG to create TrueColor Web graphics, or if you don't want your image to take up a lot of space. JPEG is a good format for photographs.

JPEG files usually have an extension .jpg, .JPG, or .jpeg. It is a very widely used format, because it compresses images very efficiently, while minimizing the loss of image quality. No other format comes close to achieving the same level of compression. It does not, however, support transparency, or multiple layers. For this reason, saving images as JPEG often requires them to be exported.

Figure 12.1. The JPEG Save dialog



When you save a file in JPEG format, you get a dialog that allows you to set the Quality level, which ranges from 1 to 100. Values above 95 are generally not useful, though. The default quality of 85 usually produces excellent results, but in many cases it is possible to set the quality substantially lower without noticeably degrading the image. You can test the effect of different quality

settings by checking "Show Preview in image window" in the JPEG dialog. Checking this causes each change in quality (or any other JPEG parameter) to be visualized in the image display. (This does not alter the image, though: it reverts back to its original state when the JPEG dialog is closed.)

The JPEG algorithm is quite complex, and involves a bewildering number of options, whose meaning is beyond the scope of this documentation. Unless you are a JPEG expert, the Quality parameter is probably the only one you will benefit from adjusting.

CAUTION



After you save an image as a JPEG file, the image will no longer be considered "dirty" by Gimp, so unless you make further changes to it, you will not receive any warning if you close it. Because JPEG is lossy and does not support transparency or multiple layers, some of the information in the image might then be lost. If you want to save all of the information in an image, use Gimp's native **XCF format**.

JPEG files from many digital cameras contain extra information called EXIF data, specifying camera settings and other information concerning the circumstances under which the image was created. Gimp's ability to handle EXIF data depends on whether the library "libexif" is available on your system; it is not automatically packaged with Gimp. If Gimp has been built with libexif support, then EXIF data is preserved if you open a JPEG file, work with the resulting image, and then save as JPEG. The EXIF data is not altered in any way when you do this (which means that certain fields within it are no longer valid). If Gimp is not built with EXIF support, this does not prevent files with EXIF data from being opened, but it means that the EXIF data will not be present when the resulting image is later saved.

NOTE



Some information about the advanced settings:

DCT Method. DCT is "discrete cosine transform", and is the first step in the JPEG algorithm going from spatial to frequency domain. The choices are "float", "integer" (the default), and "fast integer". The float method is very slightly more accurate than the int method, but is much slower unless your machine has very fast floating-point hardware. Also note that results of the floating-point method may vary slightly across machines, while the integer methods should give the same results everywhere. The fast integer method is much less accurate than the other two.

L

Layer You can think of layers as a stack of slides or clothes on your body. Each part of clothes you're wearing is a layer in the **layers dialog**. Layers are stacked on top of each other. The bottom layer is the background of the image and the components in the foreground of the image come above it.

Representation of an image with layers:



The final image:

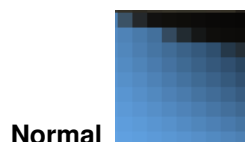


M

Marching Ants The name for the dotted line which delineates a selection.

You can disable the marching ants by unchecking the **View** → **Show Selection** option or by using the **Ctrl-T** key combination.

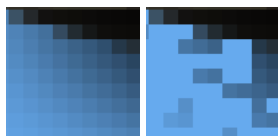
Layer Modes There are twenty-one available layer modes. Selecting a layer mode changes the way that layer or paint application is viewed based on the layer or layers beneath it.



Normal

This is the default layer mode. The layer will be viewed normally.

Dissolve The Dissolve layer mode dissolves the layer into the layer beneath it. It does so by dispersing pixels. This can best be seen in a close-up screenshot.



The image on the left illustrates a normal layer mode and the image on the right shows the same two layers in dissolve mode.



Multiply

This mode multiplies the pixel values of the layer with those that are visible beneath it.



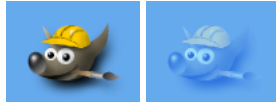
Divide

This mode divides the pixel values of the layer by the values of the visible pixels beneath it.

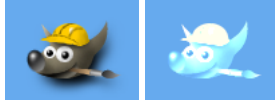


Screen

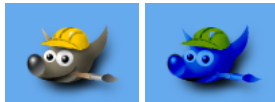
The values of the visible pixels in the two layers are inverted, multiplied, and the product inverted again. The result is usually a brighter picture.

Overlay

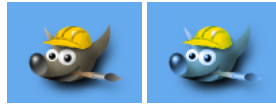
Overlay is a combination of **Multiplication** and **Screen** modes.

Dodge

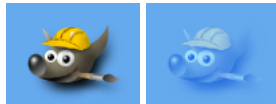
The values of the two layers are inverted, divided, and the result inverted again. This lightens the upper layer.

Burn

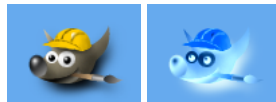
Burn mode inverts the layers, multiplies, and inverts again. This darkens the upper layer.

Hard Light

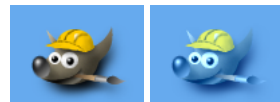
This mode is a combination of **Screen** and **Multiplication** modes.

Soft Light

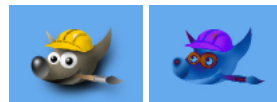
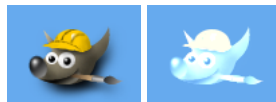
This mode gives a "soft" effect to the otherwise sharp edges of the image, and lightens the colors.

Grain Extract

Extracts the "film grain" from a layer into a new layer that is pure grain.

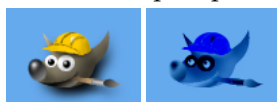
Grain Merge

Merge a grain layer (possibly created from the **Grain Extract** operation) into the current layer, leaving a grainy version of the original layer.

Difference**Addition**

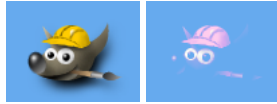
A simple operation, adding the pixel values at each location.

Subtract A simple operation, subtracting the pixel values at each location.

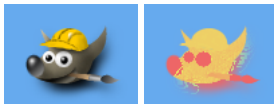
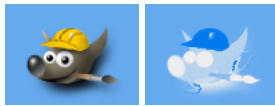


Darken Only

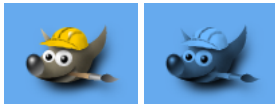
Replace the current layer's pixels with the minimum of the pixel values of the two layers at each location.

Lighten Only

Replace the current layer's pixels with the maximum of the pixel values of the two layers at each location.

Hue**Saturation****Color**

Value The image on the left illustrates a normal layer mode and the image on the right shows the same two layers in value mode.



Masks Masks are special elements associated with a layer or a selection. They modify the transparency of this layer or selection.

They belong to two types:

- *Layer Mask*: Every layer can have its own mask. The layer mask represents the Alpha channel of the layer and allow to manage transparency of this layer. So, you can make some parts of the layer opaque or transparent: using a layer mask, you paint with transparency; painting with black renders layer transparent and painting with white renders layer opaque. You can use all tools for this work. You can use Layer mask for transition effects, volume effects, merging elements from another image... See [Layer Mask](#) for more details.

Channel Mask also called *Selection Mask*: it represents the Alpha channel of the image. By painting with white you remove the mask and increase the selection; with black you reduce the selection. So, you can cut out selections precisely. More, Channel Masks allow to save your selections; you can retrieve them later by using the "Channel to selection" command from [Channel menu](#). Channel masks are so important in Gimp that a special type has been implemented: the [Quick mask](#). See [Selection mask](#) for more details.

P

Path A *path* is a one-dimensional tracing, either polygonal, or curved, or a mixture of segments of both types. In GIMP, the main uses of paths are either to form the boundaries of selections, or to be *stroked* to create visible curves on an image. See the [Paths](#) section for basic information on paths, and the [Path Tool](#) section for information on how paths can be created and edited.

PDF The PDF format was developed by Adobe to address some of the deficiencies of Postscript: most importantly, PDF files tend to be much smaller than equivalent Postscript files. As with Postscript, Gimp's support of the PDF format is via Ghostscript.

Postscript Created by Adobe, PostScript is a page description language mainly used by printers and other output devices. It's also an excellent way to distribute documents. Gimp does not support Postscript directly: it depends on a powerful free software program called Ghostscript.

The great power of Postscript is its ability to represent vector graphics—lines, curves, text, paths, etc—in a resolution-independent way. Postscript is not very efficient, though, when it comes to representing pixel-based raster graphics. For this reason, postscript is not a good format to use for saving images that are later going to be edited using Gimp or another graphics program.

Linux distributions almost always come with Ghostscript already installed (not necessarily the most recent version). For other operating systems, you may have to install it yourself. Here are instructions for installing it on Windows:

- Go to the Ghostscript project page on Sourceforge <<http://sourceforge.net/projects/ghostscript>>.
- Look for package gnu-gs or ghostscript (non-commercial use only) and go to the download section.
- Download a prepared Windows distribution like gs650w32.exe or gs700w32.exe.
- Start the executable and follow the instructions of the installation procedure.
- Copy the executable gswin32c.exe from the directory bin of the ghostscript installation to the Windows directory (or any other directory that is contained in the PATH). As an alternative, advanced users can set an environment variable GS_PROG to point to gswin32c.exe (e.g. `c:\gs\gsX.YY\bin\gswin32c.exe`)

Now you should be able to read PostScript files with GIMP. Please note that you must not move the directories of ghostscript once the installation has finished. Registry entries have been created that allow ghostscript to find libraries. (These instructions courtesy of <http://www.kirchgessner.net>.)

PNG The format that is supposed to replace the **GIF format** and thus provide a solution to GIF's trademark and patent issues. Indexed color, grayscale, and truecolor images are supported, plus an optional alpha channel. PNG also uses compression, but unlike **JPEG** it doesn't lose image information.

PSD PSD is Adobe Photoshop's native file format, and thus is comparable to **XCF** in complexity. Gimp's ability to handle PSD files is sophisticated but limited: some features of PSD files are not loaded, and only PSD versions XX or less are supported. Unfortunately, Adobe has now made the Photoshop Software Development Kit which includes their file format specifications proprietary, and only available to a limited set of developers blessed by Adobe. This does not include the Gimp development team; and the lack of information makes it very difficult to maintain up-to-date support for PSD files.

R

RGB is an acronym for Red-Green-Blue. These are the three additive primary colors. Blending together three *light sources* with these colors with different relative intensity, you can get any visible color combination, starting from black (all three sources with intensities equal to zero) to white (all three sources equal and at full light). For more information see **Color model** in this glossary.

S

Sample Merge Sample Merge is a technique useful when working with more than one layer where operations that affect one layer may take advantage of color or pixel information on all visible layers. Consider selection by color as an example of a time that this function may be useful.

Figure 12.2. Additive color model



Supersampling With this technique Gimp takes more pixels around to calculate a transitional color for instance for interpolation. Render is better but treating time longer.

T

TGA The Targa file format supports compression to 8, 16, 24 or 32 bits per pixel.

TIFF Designed to be a standard, TIFF (Tagged Image File Format) files come in many different flavors. Six different encoding routines are supported, each with one of three different image modes: black and white, grayscale and color. Uncompressed TIFF images may be 1, 4, 8 or 24 bits per pixel. TIFF images compressed using the LZW algorithm may be 6, 8 or 24 bits per pixel. This is a high quality file format, perfect for images you want to import to other programs like FrameMaker or CorelDRAW.

U

URL Uniform Resource Locator: the "address" format for the World Wide Web.

X

XCF The XCF file type is special because it is Gimp's native file type: that is, it was designed specifically to store all of the data that goes to make up a Gimp image. Because of this, XCF files may be quite complicated, and there are few programs other than Gimp that can read them.

When an image is stored as an XCF file, the file encodes nearly everything there is to know about the image: the pixel data for each of the layers, the current selection, additional channels if there are any, paths if there are any, and guides. The most important thing that is *not* saved in an XCF file is the undo history.

The pixel data in an XCF file is represented in a lossless compressed form: the image byte blocks are compressed using the lossless RLE algorithm. This means that no matter how many times you load and save an image using this format: not a single pixel or other image data will be lost or modified because of this format.

The Gimp developers have made a great effort to keep the XCF file format compatible across versions. If you create a file using Gimp 2.0, it ought to be possible to open the file in Gimp 1.2. However, some of the information in the file may not be usable: for example, Gimp 2.0 has a much more sophisticated way of handling text than Gimp 1.2, so a text layer from a Gimp 2.0 XCF file will appear as an ordinary image layer if the file is opened in Gimp 1.2.

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A. GIMP History

A.1. The very beginning

According to Peter Mattis and Spencer Kimball, the original creators of GIMP, in their announcement of GIMP 0.54:

The GIMP arose from the ashes of a hideously crafted cs164 (compilers) class project. The setting: early morning. We were both weary from lack of sleep and the terrible strain of programming a compiler in LISP. The limits of our patience had long been exceeded, and yet still the dam held.

And then it happened. Common LISP messily dumped core when it could not allocate the 17 MB it needed to generate a parser for a simple grammar using yacc. An unbelieving moment passed, there was one shared look of disgust, and then our project was vapor. We had to write something... ANYTHING... useful. Something in C. Something that did not rely on nested lists to represent a bitmap. Thus, the GIMP was born.

Like the phoenix, glorious, new life sprung out of the burnt remnants of LISP and yacc. Ideas went flying, decisions were made, the GIMP began to take form.

An image manipulation program was the consensus. A program that would at the very least lessen the necessity of using commercial software under 'Windoze' or on the 'Macintoy.' A program that would provide the features missing from the other X painting and imaging tools. A program that would help maintain the long tradition of excellent and free UNIX applications.

Six months later, we've reached an early beta stage. We want to release now to start working on compatibility issues and cross-platform stability. Also, we feel now that the program is actually usable and would like to see other interested programmers developing plug-ins and various file format support.

A.2. The early days of GIMP

Version 0.54 Version 0.54 was released in February 1996, and had a major impact as the first truly professional free image manipulation program. This was the first free program that could compete with the big commercial image manipulation programs.

Version 0.54 was a beta release, but it was so stable that you could use it for daily work. However, one of the major drawbacks of 0.54 was that the toolkit (the slidebars, menus, dialog boxes, etc.) was built on Motif, a commercial toolkit. This was a big drawback for systems like Linux, because you had to buy Motif if you wanted to use the faster, dynamically linked GIMP. Many developers were also students running Linux, who could not afford to buy Motif.

Version 0.60 When 0.60 was released in July 1996, it had been under S and P (Spencer and Peter) development for four months. Main programming advantages were the new toolkits, GTK (GIMP Toolkit) and gdk (GIMP Drawing Kit), which eliminated the reliance on Motif. For the graphic artist, 0.60 was full of new features like: basic layers; improved painting tools (sub-pixel sampling, brush spacing); a better airbrush; paint modes; etc.

Version 0.60 was only a developer's release, and was not intended for widespread use. It served as a workbench for 0.99 and the final 1.0 version, so functions and enhancement could be tested and dropped or changed. You can look at 0.60 as the alpha version of 0.99.

Version 0.99 In February 1997, 0.99 came on the scene. Together with other developers, S and P had made several changes to GIMP and added even more features. The main difference was the new API and the PDB, which made it possible to write scripts; Script-Fus (or macros) could now automate things that you would normally do by hand. GTK/gdk had also changed and was now

called GTK+. In addition, 0.99 used a new form of tile-based memory handling that made it possible to load huge images into GIMP (loading a 100 MB image into GIMP is no problem). Version 0.99 also introduced a new native GIMP file format called XCF.

The new API made it really easy to write extensions and plug-ins for GIMP. Several new plug-ins and extensions emerged to make GIMP even more useful (such as SANE, which enables scanning directly into GIMP).

In the summer of 1997, GIMP had reached version 0.99.10, and S and P had to drop most of their support since they had graduated and begun jobs. However, the other developers of GIMP continued under the orchestration of Federico Mena to make GIMP ready for primetime.

GTK+ was separated from GIMP in September 1997. GTK+ had been recognized as an excellent toolkit, and other developers began using it to build their own applications.

GIMP went into feature freeze in October 1997. This meant that no new features would be added to the GIMP core libraries and program. GUM version 0.5 was also released early in October 1997. The developing work continued to make GIMP stable and ready for version 1.0.

A.3. The One to change the world

Version 1.0 GIMP version 1.0 was released on June 5, 1998. Finally, GIMP was considered stable enough to warrant a worldwide announcement and professional use.

Version 1.2 GIMP version 1.2.0 was released on December 25, 2000. Compared to the version 1.0, it included mostly fixes and improvements of the user interface.

A.4. New in GIMP 2

Version 2.0 First, a statistic: the GIMP code base contains about 230,000 lines of C code, and most of these lines were rewritten in the evolution from 1.2 to 2.0. From the user's point of view, however, GIMP 2 is fundamentally similar to GIMP 1; the features are similar enough that GIMP 1 users won't be lost. As part of the restructuring work, the developers cleaned up the code greatly, an investment that, while not directly visible to the user, will ease maintenance and make future additions less painful. Thus, the GIMP 2 code base is significantly better organized and more maintainable than was the case for GIMP 1.2.

Basic tools The basic tools in GIMP 2 are not very different from their predecessors in GIMP 1. The "Select Regions by Color" tool is now shown in the GIMP toolbox, but was already included in GIMP 1 as a menu option in the Select menu. The Transform tool has been divided into several specialized tools: Rotation, Scale, Shearing and Perspective. Color operations are now associated with layers in the menu "Layer -> Colors", but this is merely a cleanup: they were already present in the Image menu (illogically, since they are layer operations). Thus no completely new tools appear in this release, but two of the tools have been totally revamped compared to the older versions: the Text tool and the Path tool. More on this below.

The user interface for tools has also changed significantly. The "Tool Options" dialog box was modified to not resize itself when a new tool is chosen. Most users felt that the window changing size when a new tool was selected was annoying. Now, by default the "Tool Options" dialog is constantly open and docked under the toolbox, where it can easily be found.

Tool options The "Tool Options" for many tools have new possibilities that weren't available in GIMP 1. Without being exhaustive, here are the most noticeable improvements.

All selection tools now have mode buttons: Replace, Add, Subtract and Intersect. In GIMP 1 the only way to change the selection mode was to use the Ctrl or Shift buttons, which could

get very confusing because those buttons also had other functions. For example, pressing and holding the Shift key while using the Rectangle selection tool forces the rectangle to be a square. Thus, to add a square selection you would first press Shift, then click the mouse, then release Shift, then press Shift again, then sweep out the selection with the mouse, then release Shift. It can now be done more easily.

For transformation tools, buttons now control which object (layer, selection or path) is affected by the transformation. You can for example transform a rectangular selection to various quadrilateral shapes. Path transformation in particular is now easier than it was before.

"Fade out" and "Paint Using Gradient" are now available for all drawing tools. In fact, all drawing tools now have their own individual brush, gradient and pattern settings, in contrast to GIMP 1 where there was a single global setting that applied to all drawing tools. Now you can select different brushes for the Pencil and the Paint Brush, or different patterns for the Clone and Fill tools. You can change these setting by using your mouse wheel over the relevant resource button (this is most useful for quickly and easily choosing a brush).

User Interface The most visible changes in GIMP 2 concern the user interface. GIMP now uses the GTK2+ graphical toolkit in place of GTK+. One of the nice features brought by the new libraries is dockable dialogs, and tab navigation between dialogs docked in the same window – a feature present in several popular web browsers. GIMP 1 was famous for opening dialogs anywhere on your screen; GIMP 2 can be told to use fixed boxes. Dialogs now include a little tab-customization menu, which provides maximum flexibility in organizing your workspace. The Image window has some interesting new features. These are not necessarily activated by default, but they can be checked as options in the "Preferences->Interface->Image Windows" menu. "Show Brush Outline", for example, allows you to see the outline of the brush when using drawing tools. In the "Appearance" sub-section, you can toggle whether a menu bar is present at the top of image windows. You can set an option to work with the new fullscreen mode. Viewing options are also available from all image windows using right click to bring up the menu, then selecting "View". The so-called "image" menu is also available by clicking on a little triangle in the top left corner of the drawing space. The setting you choose in the "Preferences" dialog is used as the default value, and options you set from an image are used only for that image. (You can also toggle fullscreen mode by using the F11 key; the Esc key also exits fullscreen mode).

GIMP 2 features keyboard accelerators to ease menu access. If you find that navigating through menus using your mouse is onerous, the solution may be to use the keyboard. For example, if the menu bar is present, to create a new image just hit Alt-F-N. Without the menu bar, hit Shift-F10 to open the top-left menu, and use direction keys or F then N to create the new image. Keyboard accelerators are different from shortcuts: accelerators are useful to navigate through menus, whereas shortcuts call a specific menu item directly. For example, Ctrl-N is a shortcut, and the quickest way to open a new image.

To ease access to your most commonly used menu items, the GIMP has provided dynamic shortcuts for many years. When a menu is open, you can hover over the desired menu item and hold down your shortcut combination. This feature is still present, but is deactivated by default in the GIMP 2.0, to avoid accidental re-assigning of existing shortcuts.

The GIMP also ships with a number of sets of key-bindings for its menus. If you would like to replace the default GIMP keybindings by Photoshop bindings, for example, you can move the file "menurc" in your user data directory to "oldmenurc", and rename "ps-menurc" to "menurc".

Handling Tabs and Docks The GIMP 2.0 introduces a system of tabbed dialogs to allow you to make your workspace look the way you want it to be. Almost all dialogs can be dragged to another dialog window and dropped to make a tabbed dialog set.

Furthermore, at the bottom of each dialog, there is a dockable area: drag and drop tabs here to attach dialogs beneath the bottom tab group.

Scripting "Python-fu" is now the standard external scripting interface for GIMP 2. This means that you can now use GIMP functions in Python scripts, or conversely use Python to write

GIMP plug-ins. Python is relatively easy to understand even for a beginner, especially in comparison to the Lisp-like Scheme language used for Script-fu in GIMP 1. The Python bindings are augmented by a set of classes for common operations, so you are not forced to search through the complete GIMP Procedural Database in order to carry out basic operations. Moreover, Python has integrated development environments and a gigantic library, and runs not only on Linux but also on Microsoft Windows and Macintosh OS X. The biggest drawback, for GIMP 2.0, is that the standard user interface offered in Python-fu does not use the complete power of the Python language. The interface is currently designed to support simple scripts, but a more sophisticated version is a goal of future development.

GIMP-Perl is no longer distributed with the standard GIMP 2 distribution, but is available as a separate package. Currently, GIMP-Perl is supported only on Unix-like operating systems. It includes both a simple scripting language, and the ability to code more polished interfaces using the Gtk2 perl module. Direct pixel manipulation is available through the use of PDL.

Script-fu, based on Scheme, has the same drawbacks as before: not intuitive, hard to use and lacking a real development environment. It does, however, have one major advantage compared to Python-fu: Script-fu scripts are directly interpreted by GIMP and do not require any additional software installation. Python-fu requires that you install a package for the Python language.

The Text Tool The big problem with the standard text tool in GIMP 1 was that text could not be modified after it was rendered. If you wanted to change anything about the text, all you could do was "undo" and try again (if you were lucky enough to have sufficient undo history available, and then of course you would also undo any other work you had done in the meantime). In GIMP 1.2 there was also a "dynamic text" plugin that allowed you to create special text layers and keep them around indefinitely, in a modifiable form, but it was buggy and awkward to use. The second generation Text tool is an enhanced combination of the old Text tool and the Dynamic Text plugin. Now all options are available in the "Tool Options": font, font size, text color, justify, antialiasing, indent, spacing. To create a new text item, click in the image and a little editor pops up. Text appears on the image while you are editing (and carriage returns are handled properly!). A new dedicated layer is created; this layer resizes dynamically to match the text you key in. You can import plain text from a file, and you can even do things like writing from right to left in Arabic. If you select a text layer, clicking on it opens the editor, and you can then modify your text.

The Path Tool The second generation Path tool has a completely new interface. The first major difference you notice is that paths are no longer required to be closed. A path can be made up of a number of disjoint curve segments. The next major difference is that now the path tool has three different modes, Design, Edit and Move.

In Design mode, you can create a path, add nodes to an existing path and modify the shape of a curve either by dragging edges of the curve or dragging the "handles" of a node.

In Edit mode, you can add nodes in the middle of curve edges, and remove nodes or edges, as well as change the shape of the curve. You can also connect two path components.

The third mode, Move, is, as you might expect, used to move path components. If your path has several components, you can move each path component separately. To move all components at once, use the Shift key.

De derde, verplaats-toestand kan een pad verplaatsen, als een pad uit verschillende delen bestaat kunt u die afzonderlijk verplaatsen, als u ze allemaal tegelijk wilt verplaatsen dient u de Shift toets te gebruiken.

Two other path-related features are new in the GIMP 2.0. The GIMP can not only import an SVG image as a raster image, but can also keep SVG paths intact as GIMP paths. This means that the GIMP is now more able than ever to complement your favourite vector drawing tool. The other feature which has made the path tool much better is the introduction of vector-based stroking. In previous versions, stroking paths and selections was a matter of drawing a brush-stroke along the path. This mode is still available, but it is now possible to stroke a curve accurately, using the vector library libart.

Other improvements Some other improvements in brief:

- Higher-quality antialiasing in some places – most notably in the Text tool.
- Icons and menus are skinnable. You can create your own icon set and apply it to the tool-box using the "Preference->Interface" menu option. A theme called "small" is included with the standard distribution.
- An image can be saved as a template and used to create new images.
- There are four new combination modes for layers that lie one on top of another within an image: Hard Light, Soft Light, Grain Extract and Grain Merge.
- If there is an active selection, you can crop the image directly to the selection size using image menu "Image->Crop".
- As well as being able to create guides, there's now a grid functionality in GIMP. It is complimentary to the guides functionality and makes it easier to position objects so that they align perfectly.
- The Layers dialog is more coherent, in that there are no more hidden functions accessed only with right click on the miniature image of the layer that appears there. You can now handle layer operations directly from the image menu: Layer Mask, Transparency, Transformation and Layer Color operations are directly in Layer submenu.
- Color display filters are now available from the image menu "View->Display Filters". Using them, you can simulate different gamma values, different contrasts, or even color deficient vision, without altering your original image. This actually has been a feature of the GIMP developer versions for a long time, but it has never been stable enough to appear in a stable version of the GIMP before.
- The color selection dialog has a new CMYK mode, associated with the printer icon.
- Data stored in EXIF tags by digital cameras are now handled in read and write mode for JPEG files.
- MNG animations are now supported. The MNG file format can be considered as animated PNG. It has all the advantages of PNG over GIF, such as more colors, 256 levels of transparency, and perhaps most importantly, lack of patent encumbrance. The format is a web standard and all recent popular web browsers support it.
- The GIMP Animation package now does onion-skinning, a bluescreen feature was added as well as audio support.
- A channel mixer filter, previously available from the web as an add-on, appears in "Filters->Colors".

B. Reporting Bugs and Requesting Enhancements

Sad to say, no version of GIMP has yet been absolutely perfect. Even sadder, it is likely that no version ever will be. In spite of all efforts to make everything work, a program as complicated as GIMP is bound to screw things up occasionally, or even crash.

But the fact that bugs are unavoidable does not mean that they should be passively accepted. If you find a bug in GIMP, the developers would like to know about it so they can at least try to fix it.

Suppose, then, that you have found a bug, or at least think you have: you try to do something, and the results are not what you expect. What should you do? How should you report it?

NOTE



The procedure for making an *enhancement request*—that is, for asking the developers to add a missing feature—is nearly the same as the procedure for reporting a bug. The only thing you do differently is to mark the report as an “enhancement” at the appropriate stage, as described below.

In common with many other free software projects, GIMP uses a bug-reporting mechanism called *Bugzilla*. This is a very powerful web-based system, capable of managing thousands of bug reports without losing track. In fact, GIMP shares its Bugzilla database with the entire Gnome project. At the time this is being written, Gnome Bugzilla contains 148632 bug reports—no, make that 148633.

B.1. Making sure it's a Bug

The first thing you should do, before reporting a bug, is to make an effort to verify that what you are seeing really *is* a bug. It is hard to give a method for doing this that applies to all situations, but reading the documentation will often be useful, and discussing the question on IRC or a mailing list may also be quite helpful. If you are seeing a *crash*, as opposed to mere misbehavior, the odds that it is a true bug are pretty high: well written software programs are not designed to crash under *any* circumstances. In any case, if you have made an conscientious effort to decide whether it is really a bug, and at the end still aren't sure, then please go ahead and report it: the worst that can happen is that you will waste a bit of time for the development team.

NOTE



Actually there are a few things that are known to cause GIMP to crash but have turned out to be too inconvenient to be worth fixing. One of them is asking GIMP to do something that requires vast amounts of memory, such as creating an image one million pixels on a side.

You should also make sure that you are using an up-to-date version of GIMP: reporting bugs that have already been fixed is just a waste of everybody's time. (GIMP 1 is no longer maintained, so if you use it and find bugs, either upgrade to GIMP 2 or live with them.) Particularly if you are using the development version of GIMP, make sure that you can see the bug in the latest release before filing a report.

If after due consideration you still think you have a legitimate bug report or enhancement request, the next step is to go to GIMP's bugzilla query page (<http://bugzilla.gnome.org/query.cgi>), and try to see whether somebody else has already reported the same thing. The query page allows you to search the bug database in a variety of ways. Unfortunately this page is a bit more complicated to use than it really ought to be, but here is basically what you should do:

Summary: Set this to "contains any of the words/strings".

(the adjoining entry area) Give one or more words that somebody would be likely to use in writing a one-sentence summary of a bug similar to yours. For example, if the problem is that zooming too much causes GIMP to crash, the word "zoom" would be good.

Product: Set this to "GIMP"

Component:, Version:, Target: Don't do anything for these.

Text information: For now, leave this alone. If your search does not turn up anything, it might be worth entering your search terms in the "comment" area here, but this often turns out to give you either great masses of stuff or nothing.

Status: This field encodes the status of a bug report: whether it is still open, has been resolved, etc. You want to see all relevant bug reports, regardless of status, so you should hold down the mouse and sweep it across all entries. Leaving it alone will not work.

When you have set these things up, click on the "Search" button at either the top or bottom; they both do the same thing. The result is either a list of bug reports—hopefully not too long—or a message saying "Zarro boogs found". If you don't find a related bug report by doing this, it may be worth trying another search with different terms. If in spite of your best efforts, you file a bug report and it ends up being resolved as "Duplicate", don't be too upset: it has happened repeatedly to the author of this documentation, who works with GIMP Bugzilla nearly every day.

B.2. Reporting the Bug

Okay, so you have done everything you could to make sure, and you still think it's probably a bug. You should then go ahead and file a bug report. To do this, begin by going to http://bugzilla.gnome.org/enter_bug.cgi, and go down the page until you can select the component "GIMP".

NOTE



The first time you file a bug report, you will be asked to create a Bugzilla account. The process is easy and painless, and you probably won't even get any spam as a result.

This takes you to the bug report form, which you should fill out as follows. Note that most of the information you enter can be changed later by the developers if you get it wrong, so try to get it right but don't be obsessive about it.

Summary Give a one-sentence summary that is descriptive enough so that somebody searching for similar bugs would find your bug report on the basis of the words this summary contains.

Steps to reproduce the bug Follow the directions. Be as specific as you can, and include all information that you think might possibly be relevant. The classic totally useless bug report is, "GIMP crashes. This program sucks". There is no hope that the developers can solve a problem if they can't tell what it is. If at all possible, give a procedure that will reliably reproduce the buggy behavior, and give it in enough detail so that a moron could follow it.

Component Set this to the part of GIMP that the bug affects. You have to pick something here, but if you aren't sure, make a guess and don't worry about it.

Severity In most cases you should either leave this as "Normal" or set it to "Enhancement", if it is an enhancement request rather than a malfunction. The maintainers will adjust the severity if they think it is warranted.

Priority In most cases you should leave this at "Normal", and allow the maintainers to adjust it. Setting the priority to "Immediate" or "Urgent" usually just manages to annoy people.

Version Set this to the version of GIMP that you are using. Leave the Gnome version unspecified.

Operating System Set this to your OS unless you have a very good reason for thinking that the bug applies to all operating systems.

You can ignore the rest. When you have filled out all of these things, press the "Commit" button and your bug report will be submitted. It will be assigned a number, which you may want to make note of; you will, however, be emailed any time somebody makes a comment on your bug report or otherwise alters it, so you will receive reminders in any case. You can see the current state of your bug report at any time by going to <http://bugzilla.gnome.org> and, at the bottom of the page, in the "Actions:" area, entering the bug number and pressing the "Find" button.

Sometimes it is very helpful to augment a bug report with a screenshot or some other type of data. If you need to do this, go to the web page for your bug report, click on the link "Create a New Attachment", and follow the directions. But please don't do this unless you think the attachment is really going to be useful—and if you need to attach a screenshot, don't make it any larger than necessary. Bug reports are likely to remain on the system for years, so there is no sense in wasting memory.

B.3. What Happens to a Bug Report after you Submit it

At any time after it is submitted, a bug report has a "Status" that describes how it is currently being handled. Here are the possible values of *Status* and what they mean:

Unconfirmed This is the initial status of a bug report, from the time it is submitted until one of the maintainers reads it and decides whether it is really a valid bug report. Sometimes the maintainers aren't sure, and in the meantime leave the status as "Unconfirmed". In the worst cases, a bug report can stay unconfirmed for a year or longer, but this is considered a bad thing and does not happen very often.

New This means that the bug report has been read by one of the maintainers, and is considered, for the moment at least, to be valid. It does not necessarily mean that anything is going to be done about it immediately: some bug reports, especially enhancement requests, may be perfectly valid and still go for a long time before anybody is able to deal with them. Many bugs, on the other hand, are fixed within hours of being reported.

Assigned This means that a specific person has agreed to work on the bug. It does not, this world being the kind of world that it is, mean that that person will actually *do* anything in particular, so for practical purposes this status means nearly the same thing as "New".

Reopened This means that the bug report was at some point considered by the maintainers to be resolved (i.e., finished), but new information came in that caused them to change their minds: most likely, a change that was intended to fix the problem did not completely work.

Needinfo This is a status you should pay particular attention to. It means that you did not supply enough information in your bug report to enable anything to be done about it. In most cases, no further action will be taken on the bug report until you supply additional information (by adding a comment). If too much time goes by without any input from you, the bug report will eventually be resolved as "Incomplete".

Resolved This means that the maintainers believe that they have finished dealing with the bug report. If you disagree, you can re-open it, but since you cannot force anybody to work on a bug against their will, you should have a good reason for doing so. Bugs can be resolved in a variety of ways. Here are the possible values of *Resolution* and what they mean:

Fixed The bug report is considered valid, and GIMP has been changed in a way that is considered to fix it.

Wontfix The maintainers agree that the bug report is valid, but it would take so much effort to fix, in relation to its importance, that it is not worth the trouble.

Duplicate This means that the same bug has already been reported by somebody else. If you see this resolution, you will also see a pointer to the earlier bug report, which will often give you a lot of useful information.

Notabug This means that the behavior described in the bug report is intentional. It may seem like a bug to you (and there may be many people who agree with you), but the program is working the way it was intended to work, and the developers don't want to change it.

NotGnome The bug report is valid, but it can't be addressed by changing GIMP. Problems in operating systems, window managers, or libraries that GIMP depends on will often be given this resolution. Sometimes the next appropriate step is to file a bug report for the software that is really at fault.

Incomplete The bug report did not contain enough information for anything to be done about it, and the reporter did not respond to requests for more information. Usually a bug report will be open for at least a month or two before it is resolved in this way.

Invalid Something is wrong with the form of the bug report: most commonly, the reporter has accidentally submitted the same bug report multiple times. (This can easily happen by mistake with some web browsers.) Bug reports that incorrectly describe how the program behaves may also be resolved as Invalid.

NOTE



If you disagree with the resolution of a bug report, you are always free to add your comments to it. Any comment added to any bug report, resolved or not, causes email to be sent to the GIMP Bugzilla mailing list, so it will at least be seen by the maintainers. This does not, of course, mean that they will necessarily respond to it.

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C.1. PREAMBLE

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